# RCA Victor
# SERVICE NOTES
for
1938

Radio Receivers
Victrolas
Television
Test Equipment

Service Division
RCA Manufacturing Company, Inc.
Camden, N. J., U. S. A.

RCA Victor

SERVICE NOTES for 1938

Radio Receivers - Victrolas - Television - Test Equipment

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95T5LW	RC-348F	113	
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96K2	RC-351B	123	(38C)
96K5	RC-351L	129	
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96T1	RC-348D	107	(38) (38A) (38E)
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97E	RC-351A	123	(38C)
97K	RC-351F	135	
97K2	RC-351K	129	
97KG	RC-351A	123	(38C)
97T	RC-351A	123	(38C) (38D)
97T2	RC-351K	129	
98K	RC-335A	143	(3) (40) (41) (42) (42A) (43)
99K	RC-335B	151	(3) (41) (42) (42A) (43) (44)
99T	RC-335H	151	(3) (41) (42) (42A) (43) (44)
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U-125	RC-386	209, 401	(38C) (48) (58)
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U-130	RC-354	21, 401	(3) (4) (43) (51) (58)
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9X6	RC-350A	283	
9X11 to 9X14	RC-350A	283	
94X	RC-332	285	(33)
94X-1	RC-340	287	(33)
94X-2	RC-340	287	(33)
95X	RC-345D	289	
95XL	RC-345E	289	
95XLW	RC-345F	291	
95X1	RC-345C	293	
95X6	RC-381A	295	(34)
95X11	RC-381	297	
97X	RC-349	299	(38A)
97Y	RC-352A	303	(38C) (39)
98EY	RC-352	303	(38C) (39)
98X	RC-352	303	(38C) (39)
98YG	RC-352	303	(38C) (39)

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94BK1	RC-333B	225	
94BK2	RC-390	227	(29)
94BP4 -B, -C, -R	RC-410	231	(30) (31) (32)
94BT	RC-333	223	(28)
94BT1	RC-333B	225	
94BT2	RC-390	227	(29)
94BT6	RC-333A	233	
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8M2	RC-320A	245	(11) (15)
8M3	RC-321	253	(12) (13) (15)
8M4	RC-321A	253	(11) (13) (14) (15)
9M1	RC-357	261	(16)
9M2	RC-357A	267	(16)

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** Radio chassis numbers.

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9844, 9844A		401	(58)
9850		406	

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155		389	
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RC-318	8M	241	(9) (15)
RC-319B	U-106	181	(2) (46)
RC-320	8M1	245	(10) (15)
RC-320A	8M2	245	(11) (15)
RC-321	8M3	253	(12) (13) (15)
RC-321A	8M4	253	(11) (13) (14) (15)
RC-323	95T	105	(35) (36) (37)
	95T1	105	(35) (36) (37)
RC-325C	5Q2	53	
RC-325D	5Q2X	273	
RC-331	HF-8	31	(3) (5) (6)
	HF-8A	31	(3) (5) (6) (7)
RC-331A	HF-6	31	(3) (5)
RC-331B	U-134	31, 401	(3) (5) (6) (51) (53) (54) (58)
	U-134A	31, 401	(3) (5) (6) (7) (51) (53) (54) (58)
RC-331C	U-132	31, 401	(3) (5) (51) (52) (53) (58)
RC-332	94X	285	(33)
RC-333	94BT	223	(28)
	94BK	223	(28)
RC-333A	94BT6	233	
RC-333B	94BT1	225	
	94BK1	225	
RC-333C	94BT61	235	
RC-335	911K	169	(3) (42A) (57)
RC-335A	98K	143	(3) (40) (41) (42) (42A) (43)
RC-335B	99K	151	(3) (41) (42) (42A) (43) (44)
RC-335C	11Q4	79	(3)
	11QK	79	(3)
RC-335D	U-126	159	(3) (42) (42A) (43) (49)
	U-128	159, 401	(3) (42) (42A) (43) (50) (58)
RC-335E	11QU	79, 401	(3) (21) (58)
RC-335F	910KG	159	(3) (41) (42) (42A) (56)
RC-335H	99T	151	(3) (41) (42) (42A) (43) (44)
RC-336	8QB	217	
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RC-337	8Q1	61, 309, 311	
RC-337A	8Q4	67, 309, 311	
RC-337B	10Q1	73, 309, 311	
RC-338	12Q4	89, 309, 311	(22)
	12QK	89, 309, 311	(22)
RC-338A	12QU	89, 309, 401	(21) (22) (58)
RC-339	HF-1	17	(1) (2)
RC-340	94X1	287	(33)
	94X2	287	(33)
RC-341	U-111	191, 195	(47)
RC-341C	U-112	195	(47)
RC-345C	95X1	293	
RC-345D	95X	289	
RC-345E	95XL	289	
RC-345F	95XLW	291	
RC-345H	U-104	177	(45)
RC-348	95T5	107	(38) (38A)
RC-348A	96T	107	(38) (38A)
RC-348C	96E	107	(38) (38A) (38D)
RC-348D	96T1	107	(38) (38A) (38E)
RC-348E	U-115	197	
RC-348F	95T5LW	113	
RC-349	97X	299	(38A)
RC-350	9X to 9X4	281	(19)
RC-350A	9X6	283	
	9X11 to 9X14	283	
RC-351	96T2	117	(38B) (38D)
	96K	117	(38B)
RC-351A	97T	123	(38C) (38D)
	97KG	123	(38C)
	97E	123	(38C)
RC-351B	96T3	123	(38C) (38D) (38F)
	96K2	123	(38C)
RC-351C	U-124	201	(38C)
RC-351D	U-122E	201	(38C)
RC-351E	U-119	201	(38C)
RC-351F	97K	135	
RC-351K	97T2	129	
	97K2	129	
RC-351L	96T7	129	
	96K5	129	
	96E2	129	
	96K6	129	
RC-352	98EY	303	(38C) (39)
	98X	303	(38C) (39)
	98YG	303	(38C) (39)
RC-352A	97Y	303	(38C) (39)
RC-352B	UY-122E	325	
RC-352C	UY-124	325	
RC-354	U-130	21, 401	(3) (4) (43) (51) (58)
RC-354A	HF-4	21	(3) (4) (43)
RC-354B	HF-2	21	(3) (4) (43)
RC-357	9M1	261	(16)
RC-357A	9M2	267	(16)
RC-366	5Q4	57	
RC-381	95X11	297	
RC-381A	95X6	295	(34)
RC-386	U-125	209, 401	(38C) (48) (58)
RC-390	94BT2	227	(29)
	94BK2	227	(29)
RC-392	96BT6	237	
	96BK6	237	
RC-401	9TX-1 to 9TX-5	279	(18)
RC-410	94BP4 -B, -C, -R	231	(30) (31) (42)
RC-427	TRK-12	341	
RC-427A	TRK-9	341	
RC-429	TRK-5	327	

Supplementary Data for Models in 1938 Bound Volume

(1) MODEL HF-1

Failure of Oscillator:

A few instruments contained a 33,000 ohm resistor in position R-2, serving as grid leak for the 6A8 oscillator section. It has been found that a 100,000 ohm, ¼ watt resistor will give better performance over a greater range of tube characteristic and voltage variations. The 100,000 ohm resistor (Stock No. 14560) should be installed if required.

Additional Replacement Parts:

Stock No.	
32582	Hinge—Cabinet lid hinge
31434	Switch—"On-off" power switch (S3)

(2) MODELS HF-1 AND U-106

Code Marking of Oscillator Coils:

Coils used in the oscillator circuit in conjunction with "push button" tuning are coded as follows for identification purposes:

Stock No.	Range	Color Code	or No.
30747	770-1,550 kc	Red	1
30748	600-1,260 kc	Orange	2
30749	540-1,160 kc	Black	3

(3) MODELS HF-2, HF-4, HF-6, HF-8, 11Q4, 11QK, 11QU, 98K, 99T, 99K, U-126, U-128, U-130, U-132, U-134, 910KG, 911K

Modified Electric Tuning Motor—Friction Clutch Type:

Some 1938-39 electric tuning models incorporate a drive motor corresponding to the accompanying drawings. This motor employs a friction clutch, its flywheel requires no adjustment, and starting is accomplished by means of a capacitive phase shifting circuit. Replacement stock numbers and models involved are as follows:

	Models 98K, 99T, 99K, 910KG, 911K, 11Q4, 11QK	Models HF-2, HF-4, U-126, U-128, U-130, 11QU	Models HF-6, HF-8, U-132, U-134
	Stock No.	Stock No.	Stock No.
(a) Motor, 60 mfd. capacitor, roller and damper (50-60 cycle)..	32095	32095	32095
(b) Motor, 180 mfd. capacitor, and roller (25 cycle)..........	32434	32434	32434
(c) Motor mounting bracket............................	32087	32090	32089
(d) Drive gear assembly (comprising disc and pinion, knob shaft, drive gear and bracket)..........................	32091	32091	32092

The mechanical clutch type motor (Stock No. 31235 for 50-60 cycle and No. 31246 for 25 cycle) is replaceable for service purposes where desired by the friction clutch type motor (a) or (b) if the revised bracket (c) and drive gear assembly (d) are used as specified above. (The mechanical clutch type motors, Stock Nos. 31235 and 31246, will be continued as replacement parts.)

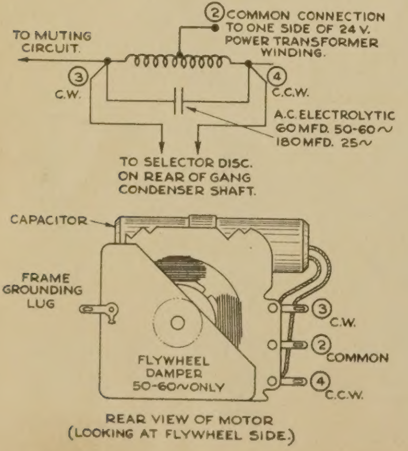
Note No. 1—When installing motor on all "Victrola" models remove thrust spring on motor shaft by pulling out with long-nose pliers.

Note No. 2—Rubber roller is attached to shaft with shellac.

Note No. 3—An 820 mmf. capacitor (Stock No. 12536) must be added across the selector disc circuit.

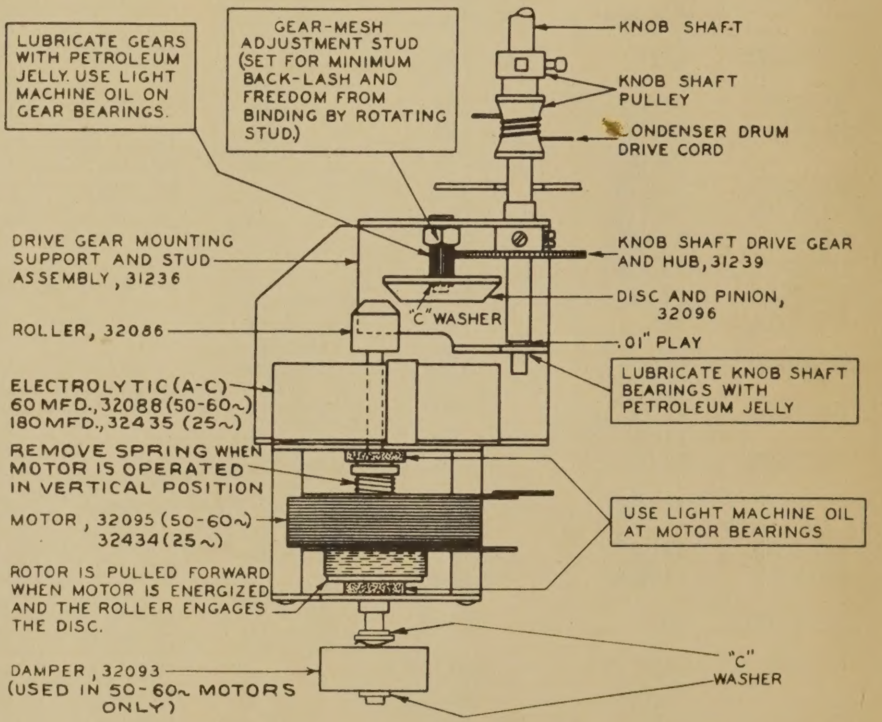
Replacement Parts for Friction Clutch Type Motor:

Stock No.	
32088	Capacitor—60 mfd. a-c electrolytic, 40 volts (50-60 cycle only)
32435	Capacitor—180 mfd. a-c electrolytic, 40 volts (25 cycle only)
32093	Damper—Flywheel damper for rear end of motor shaft (50-60 cycle motors only)
32096	Disc—Friction disc and pinion gear
31239	Gear—Knob shaft drive gear and hub
32086	Roller—Rubber friction roller for front end of motor shaft
31681	Shaft—Dial drive knob shaft
32094	Washers — Washers for mounting damper on 50-60 cycle motor



②COMMON CONNECTION TO ONE SIDE OF 24 V. POWER TRANSFORMER WINDING.
TO MUTING CIRCUIT.
③ C.W.
④ C.C.W.
A.C. ELECTROLYTIC 60 MFD. 50-60~ 180 MFD. 25~
TO SELECTOR DISC. ON REAR OF GANG CONDENSER SHAFT.
CAPACITOR
FRAME GROUNDING LUG
FLYWHEEL DAMPER 50-60~ONLY
③ C.W.
② COMMON
④ C.C.W.
REAR VIEW OF MOTOR (LOOKING AT FLYWHEEL SIDE.)

Friction Clutch Type Electric Tuning Motor



LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS.
GEAR-MESH ADJUSTMENT STUD (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUD.)
KNOB SHAFT
KNOB SHAFT PULLEY
CONDENSER DRUM DRIVE CORD
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB SHAFT DRIVE GEAR AND HUB, 31239
DISC AND PINION, 32096
"C" WASHER
ROLLER, 32086
.01" PLAY
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ELECTROLYTIC (A-C) 60 MFD., 32088 (50-60~) 180 MFD., 32435 (25~)
REMOVE SPRING WHEN MOTOR IS OPERATED IN VERTICAL POSITION
MOTOR, 32095 (50-60~) 32434 (25~)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ROLLER ENGAGES THE DISC.
DAMPER, 32093 (USED IN 50-60~ MOTORS ONLY)
"C" WASHER

Friction Clutch Type Electric Tuning Motor.

Oscillation of Tuning Mechanism:

Refer to service data for models 11Q4, 11QK, 11QU for information relative to correction of excessive oscillation of mechanical clutch type tuning mechanism.

Mechanical Noise:

Noisy operation of the electric tuning mechanism, especially on larger instruments, may be reduced by application of the following suggestions:

(a) Thoroughly lubricate slide rods which carry dial pointer. Use an oil that does not tend to harden with age and also clings well to the guides.

(b) Lubricate the fork of AFC switch (where used) with similar oil.

(c) See that the dial drum is not rubbing against pilot light shields.

(d) Check alignment between motor shaft and pinion gear shaft, to see that these are adjusted on the same axis. It may be necessary to "shim" the motor mounting to accomplish ideal alignment. (This applies to mechanical clutch type mechanism.)

Revised Flywheel:

A revised design of flywheel has been employed on the mechanical clutch type drive motor of electric tuning models. This flywheel is available for replacement use, and is stocked as Part No. 31240. (This type is illustrated in service data for 11Q4, 11QK, 11QU.) It has two leather friction pads with adjustment provided for each. The use of two pads reduces the pressure required for ideal adjustment and thereby lessens wear and glazing to a point where stable operation and normal stopping of dial pointer continues indefinitely. These flywheels are also balanced so that each one passes a very stringent factory test; this being an influence in obtaining good adjustment as well as in keeping mechanical vibration to a minimum. When installing a flywheel, it is very important to have the leather friction pads thoroughly saturated with "Neatsfoot" oil; they should be soaked in this oil for at least 24 hours.

Increased Torque:

Some motors in the mechanical clutch type electric tuning mechanism have a 60 mfd., 40 volt, Stock No. 32088 capacitor connected to the circuit as shown. This capacitor increases the torque of the motor and is primarily intended to increase rotor thrust for positive engagement of the arm and clutch. Should a motor which fails to "pull into" running position or which chatters in and out of engagement, be encountered in the field, the capacitor may be added as a remedy. It should be connected between the two top lugs of the motor (No. 3-No. 4) as shown, and the lead from the winding to No. 4 must be cut and secured clear of the circuit.

Mechanical Motor Rumble:

Under certain conditions related to acoustics of room, placement of instrument, and general noise level, the mechanical noise of some mechanical clutch type electric tuning motors may be found objectionable. Should such a condition exist, it may be due to an unbalanced flywheel or noisy gear system. Check to see that intermediate gear Stock No. 31238 is the "micarta" type, and that the flywheel, Stock No. 31240, is correctly "balanced." The standard replacement units meet these requirements.

Push Buttons Not Latching:

The position of the chassis in the cabinet with respect to the push buttons, is important in obtaining positive latching action. It may be necessary in some cases to elevate the front of the chassis slightly (approximately ⅛-inch) by placing washers under its mounting feet, in order to obtain the best operation.

The strength of the spring used at one end of the latch bar to retain the switch lever in the "on" position has been increased in order to obtain a more positive latching action. The present spring is available as Stock No. 31970. Parts lists in service notes on models concerned should be accordingly changed.

(4) MODELS HF-2, HF-4, AND U-130

Reduction of Residual Hum:

It may be found in a few instances that hum induction will take place between the power transformer wiring and the volume control circuit. This can be prevented or remedied by dressing the brown lead connected to No. 6 (P) terminal of the 5T4 socket well away from the No. 6 (blank) pin of the 6K7 I-F socket and from the black lead connected to same.

(5) MODELS HF-6, HF-8, U-132, AND U-134

A.V.C. Timing on Short Wave:

In some localities, the fading of short wave signals has a very "rapid" or "abrupt" characteristic which becomes apparent as a "barking" effect in the reproduction of the program. Where this condition is noted, it is recommended that the speed of the AVC circuits be increased by changing the value of capacitor C-70 from .05 mfd to .01 mfd. Further improvement may possibly be obtained by the use of two antennas, spaced as far as possible from each other, erected in different directions, and connected multiple at the receiver.

(6) MODELS HF-8 AND U-134

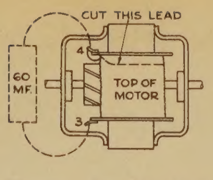
Additional Replacement Part:

Stock No.	
31566	Pull—Cabinet door pull

(7) MODELS HF-8A AND U-134A

Technical Information and Service Data:

All information published in Service Notes for Models HF-8 and U-134 applies to these models, except that referring to remote control. This device is not incorporated on the "A" models.



Increased Torque for Mechanical Clutch Type Electric Tuning Motor.

(8) MODELS PSU-8E AND PSU-10E

Circuit Changes:

Change R-3 from contact 6 to contact 1 on vibrator socket. Change R-4 from contact 1 to contact 6 on vibrator socket. Any unit being serviced should be checked for this change.

Fuse Rating:

Units being operated on 220 volts should have both fuses changed to 3 ampere rating.

(9) MODEL 8M

Vibrator Hum:

Some instruments may produce a mechanical hum which is accentuated when the instrument is mounted in a car and attached to the instrument panel. If this condition is apparent, a strip of felt 1¾-inch x 1¼-inch x ½-inch should be installed between the vibrator unit and the power transformer, and cemented to the transformer.

Dial Slippage:

The following procedure is suggested to overcome slippage of the dial drive, resulting from the dial scale rubbing against the case.

(a) Remove the three nuts which hold dial in place and take dial off of dial drive drum.
(b) Loosen two set screws on hub of dial drive drum. Move drum as far as possible toward chassis, allowing just enough clearance to prevent its scraping against the two brass screw heads.
(c) Replace dial and make sure that the dial scale is concentric with the shaft, before tightening the dial mounting nuts.
(d) Mount chassis as far back in case as possible.
(e) Mount chassis so that dial is centered from left to right with respect to the case.
(f) If dial scale is loose in its mounting, slightly crimp edge of brass mounting with diagonal cutters.
(g) See that rubber grommets are in place in shaft holes of case.
(h) Mount the case-end as far forward as possible.

(10) MODEL 8M1

Vibrator Power Unit:

A limited number of 8M1 auto receivers have power units which contain a reactor-capacitor combination in the filter circuit, instead of the usual resistor-capacitor combination. The circuit corresponds exactly to the right diagram of Figure 5 in the 8M1-8M2 Service Note. R-14 has been removed from the circuit.

(11) MODELS 8M2 AND 8M4

Mounting Washers:

The large flat washer and two lockwashers originally supplied for mounting of the external speaker, are being omitted in some outfit packages, and substituted by two special type washers which are suitable for the same purpose.

(12) MODEL 8M3

Inoperative or Intermittent:

The plating on the adjustment screws of the antenna trimmer C-3 may become chipped, and will cause the trimmer to be short-circuited. In order to correct this condition, remove the screw entirely, see that the metallic chips are cleaned from the trimmer plates, and clean the burrs from the threads of the screw. Replace the screw and re-adjust the trimmer at 1,400 kc as directed in the 8M3 Service Note.

(13) MODELS 8M3 AND 8M4

Noise Filter Change:

It is occasionally advantageous on the automotive receivers 8M3 and 8M4 to have the 22 mmfd. antenna shunt capacitor C-1 connected between the output end of the antenna filter coil L-1, instead of between the antenna end and chassis. Later production sets incorporate this change. It is to be noted also on these same instruments, that secure electrical contact is required between the vibrator transformer and the chassis in order to minimize internal noise induction.

(14) MODEL 8M4

Vibrator Interference:

Noise or hum interference may develop when the Local-Distance switch is operated on the local position, if there are poor grounds at the car battery or insecure contact between various members of the car chassis. The interference can be eliminated by installing a 500 ohm resistor, preferably a flexible pigtail type, in series with the BLACK lead to the Local-Distance switch on the control head assembly.

(15) MODELS 8M, 8M1, 8M2, 8M3, AND 8M4

High-Capacity Auto Antennas:

On a number of cars having built-in antennas of relatively high capacitance it is frequently difficult to obtain best signal-to-noise ratio, due to improper matching of the antenna system to the input. This is particularly true where the insulated steel top insert, running board, or rear trunk is employed as antenna. Improved performance can be obtained by changing the value of the antenna series capacitor from 680 mmfd. to a value 300-400 mmfd. Correct matching is indicated by ability to reach a definite peak adjustment on the "Antenna Compensating Capacitor."

(16) MODELS 9M1 AND 9M2

Push-Button Adjustment:

It is very important that the caution given in the instruction sheet relative to tightening the push button screws be observed. Forcing the adjustment screw past its normal stop will cause damage to the tuning assembly.

Additional Replacement Part:

Stock No.	
32510	Screw—Cam locking screw for tuning unit assembly

(17) MODELS 9SX-1, -2, -3, -4, -5, -6, -7, -8

Additional Replacement Parts:

Stock No.	
32666	Spring—Tuning knob spring
32667	Spring—Volume or range knob spring
32948	Switch—Range switch
32949	Socket—Dial lamp socket

(18) MODELS 9TX-1, -2, -3, -4, -5

Additional Replacement Parts:

Stock No.	
32667	Spring—Volume knob spring
32803	Spring—Tuning knob spring
33006	Foot—Rubber foot for 9TX-3 only

(19) MODELS 9X1, 2, 3, 4

Technical Information and Service Data:

These instruments are identical to Model 9X except for cabinets. The plastic cabinet colors are:

Model 9X1—Brazilian Onyx Green
Model 9X2—Jet Black
Model 9X3—Arizona Onyx Cream
Model 9X4—Burl Onyx Brown

All service data for Model 9X apply to these instruments except the following replacement parts:

Stock No.	
31915	Escutcheon—Dial escutcheon (9X1, 9X2, 9X3, 9X4 only)
31914	Knob—Tuning or volume knob (9X2, 9X3 only)
31204	Knob—Tuning or volume knob (9X, 9X1, 9X4 only)

(20) MODELS O-11, O-12, AND O-15

Replacement Drive Motor:

The spring wound motor Stock No. 13854 now supplied for replacement in these portable Victrolas has several mechanical revisions affecting a number of components. It is, therefore, essential to identify the motor being serviced before ordering replacement parts for same. The revised motor as currently supplied can be identified by the **rubber sleeve** associated with the spindle; the earlier motor does not carry this sleeve. The following parts are for use on the revised motor only; similar parts for the earlier motors, and the remaining parts for both types are given by the O-11, O-12 and O-15 Service Notes:

Stock No.	
33366	Gear—Intermediate drive gear and shaft
33367	Spindle—Turntable spindle and drive gears
33368	Turntable—Complete with black cover
33369	Turntable—Complete with brown cover
33370	Turntable—Complete with blue cover
33371	Cap—Turntable spindle cap
33372	Sleeve—Rubber drive sleeve, and metal damper plate
33373	Bearing—One set governor shaft bearings

IMPORTANT.—When ordering a complete replacement motor Stock No. 13854 for use on earlier instruments having the motor with sleeveless spindle, it will be necessary to order the proper turntable as listed above. The earlier turntable does not fit the revised motor.

(21) MODELS 11QU AND 12QU

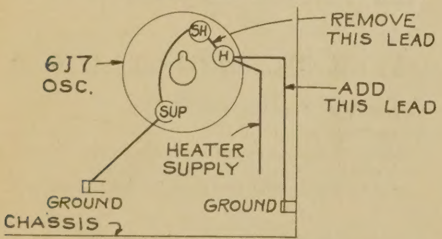
Additional Replacement Part:

Stock No.	
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. long)

(22) MODELS 12Q4, 12QK, 12QU

Hum Modulation:

A limited number of earlier production instruments may exhibit a hum or low frequency interference when tuned to a short wave station on the spread bands. The interference is accentuated by slight detuning of the station to one side of the carrier. Should this condition be observed, it can be readily eliminated by reference to the following diagram and instructions:

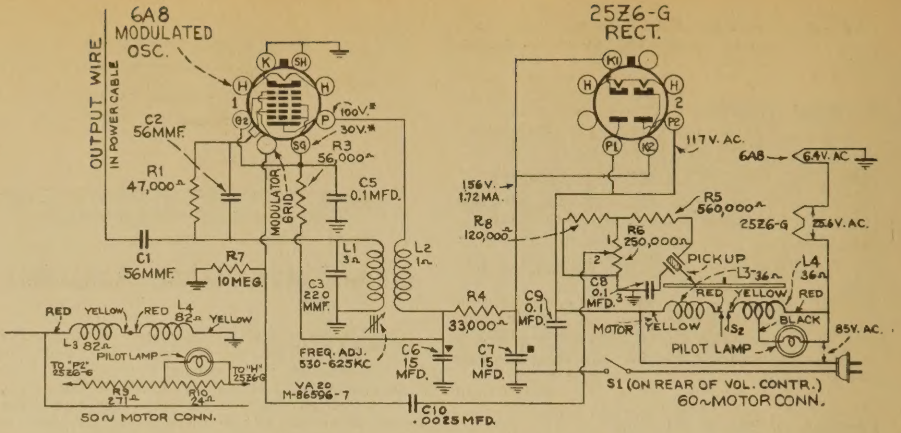


Models 12Q4, 12QK, 12QU Hum Reduction.

(a) Remove the small bus lead which joins the "Shield" and "Heater" contacts on the 6J7 oscillator socket.

(b) Install a short lead between the "Heater" contact and side of chassis as shown above.

CAUTION.—Do not disturb other leads when making this change, otherwise it may be necessary to make a slight re-adjustment of the 19 and 25 meter oscillator trimmers to restore proper dial calibration.



Revised Circuit for Model VA-20.

(23) MODEL VA-20

Over-Modulation or Distortion:

On some records, and particularly with pickup units having relatively high voltage output, an occasional case may be encountered where distortion occurs at advanced volume control (VA-20) settings. This condition can be eliminated by effecting the following circuit changes:

Remove:

Self bias resistor R-2 and associated bypass capacitor C-4 from cathode circuit of 6A8 modulator-oscillator stage.

Install:

(a) Connection between 6A8 cathode (K) and shell (SH) (or chassis).

(b) A 10 megohm resistor Stock No. 13601 between "modulator grid" and cathode (K) on 6A8 socket (or chassis).

(c) A .0025 mfd capacitor Stock No. 5107 in series with green lead from arm of volume control to "modulator grid."

(d) A 120,000 ohm resistor Stock No. 13734 across the volume control from terminal 1 to terminal 3.

The overmodulation condition can also be avoided by operating the VA-20 volume control at a retarded position, and regulating volume by means of the receiver control. The above changes however, effect a foolproof cure, and should be incorporated on any instruments being serviced. These changes are incorporated in later production instruments.

Motor Switch:

Later production 60-cycle models have a switch (S2) to break the motor coil circuit when the rotor is lifted up from the motor.

Additional Replacement Parts:

Stock No.	
33041	Ring—Retaining ring and metal washer to mount turntable plate
5107	Capacitor—.0025 mfd. capacitor (C10)
13734	Resistor—120,000 ohms (R8)
13601	Resistor—10 megohms (R7)

Change in 50-Cycle VA-20:

Late production of 50-cycle models have a 110-volt motor, and a ballast resistor in series with the heater circuit as shown in the accompanying schematic. The following parts apply to the late 50-cycle instrument:

Stock No.	
31034	Motor—110 volt, 50 cycle, less mounting
31037	Rotor—Turntable and rotor lamination assembly complete for 50-cycle operation
31043	Stator—Stator assembly complete with coils and laminations for 50-cycle operation
33484	Resistor—Ballast resistor, 1-24 ohm and 1-271 ohm sections for heater circuit (R10, R9)

(24) MODEL R-89

Blocking or Distortion at High Volume:

The amount of reserve amplification provided in this instrument is such that on records having very "heavy" modulation, there may be a tendency to block or produce a choking type of distortion. This condition can be removed by reducing the value of R-9 from 10 megohms to 1 megohm. This resistor is in the grid return circuit of the 6F5. The 1 megohm may be added in multiple with the 10 megohms.

Circuit Changes:

Capacitor C-5 changed in value from .025 to .015 mfd.

A 330,000 ohm resistor (R10) added across pickup output jack.

These changes are incorporated in later production instruments.

Additional Replacement Parts:

Stock No.	
11315	Capacitor—.015 mfd. (C5)
11297	Resistor—330,000 ohm, 1/10 watt (R10)
13730	Resistor—1 meg., ½ watt (R9)
33041	Ring — Retaining ring and metal washer to mount turntable plate

(25) MODEL R-91

Reduction of Rumble:

It is possible to reduce the mechanical vibration and resultant hum by reversing one of the coils of the stator assembly. This may be done in a simple manner, without disconnecting leads, by removing one coil from the stator, turning it end-for-end, and replacing it on the stator so that its leads are toward the center bearing.

(26) MODELS R-93B AND R-93C

Service Data Correction:

The radio-phonograph switch illustrated in Figure 1 is the earlier type switch, Stock No. 4460, and cable, Stock No. 4461. This switch and cable is superseded by Stock No. 9824 switch-and-cable, which is shown in Service Data for Model R-94B. The section "Connecting Record Player to Radio Receiver" in R-94B applies to R-93B and R-93C.

Additional Replacement Parts:

Stock No.	
31049	Base—Pickup arm pivot shaft and mounting base assembly (using nut and washer type mounting)
31744	Base—Pickup arm pivot shaft and mounting base assembly (using retaining ring type mounting)
31745	Ring—Retaining ring and washer for pickup arm base mounting, No. 31744
33041	Ring — Retaining ring and metal washer to mount turntable plate

110-VOLT, 25-CYCLE MOTOR ASSEMBLY

(Connections same as for 110-volt, 60-cycle motor. Resistance of each coil, 250 ohms.)

Stock No.	
32077	Motor — 110-volt, 25-cycle — less mounting
32073	Rotor—Turntable and rotor lamination assembly complete for 25-cycle motor, Stock No. 32077
32072	Stator—Stator coils, laminations, and weights for 25-cycle motor, Stock No. 32077

32076	Turntable—Finished turntable top plate only, for 25-cycle motor, Stock No. 32077
32074	Weights—One upper and one lower weight for 25-cycle stator, Stock No. 32072 (2 sets required)
32075	Weight—Lead ring for 25-cycle rotor, Stock No. 32073

220-VOLT, 50-CYCLE MOTOR ASSEMBLY

(Connections same as for 110-volt, 50-cycle motor. Resistance of each coil, 300 ohms.)

Stock No.	
31992	Motor — 220-volt, 50-cycle — less mounting
31994	Stator—Stator assembly complete with coils and laminations for 220-volt, 50-cycle motor, Stock No. 31992

All other motor parts for 110-volt, 50-cycle motor apply to 220-volt, 50-cycle motor.

Note that stators, Stock No. 31043 and 31042, are for 110-volt motors only.

(27) MODEL R-94B

Low-Frequency Rumble:

It has been found beneficial to check the tone arm mounting, in cases where "rumble" is experienced. The mounting nut will probably be found screwed too tight; and it will be necessary to loosen it about 1 complete turn.

(28) MODELS 94BT AND 94BK

Adaption for 1½-Volt Operation:

It is a relatively simple operation to convert the Model 94BT and 94BK battery receivers for use on 1½ volts. The following procedure should be used:

Parts Required

1 820 ohm, ½ watt resistor, Stock No. 14076
1 1 megohm, ½ watt resistor, Stock No. 13730
1 RCA-1A7G tube
1 RCA-1N5G tube
1 RCA-1H5G tube
1 RCA-1C5G tube

Refer to the Model 94BT-94BK Service Notes and effect the following changes:

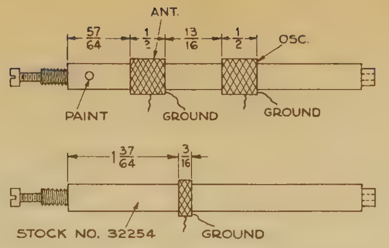
(a) Remove R-3, R-6, R-9, R-11, R-12 and C-15 from the circuit.
(b) Connect 820 ohm resistor between yellow battery cable lead (pin No. 1 on the output tube socket), and the chassis.
(c) Re-connect R-10 between the green detector grid lead (pin No. 1 on the second detector socket) and the chassis.
(d) Interchange the connections to DP-1 and DP-2 (pins No. 4 and No. 5) on the second detector socket. DP-2 should connect to terminal "C" on the second I-F transformer, and DP-1 to the chassis.
(e) Connect 1 megohm resistor (Stock No. 13730) between terminal "E" on the second I-F transformer and the chassis.
(f) Remove the green lead connecting the I-F screen-grid to the first detector screen grid; and connect the I-F screen grid to terminal "A" on first I-F transformer.
(g) Disconnect ungrounded end of C-10 from I-F screen grid and connect to the first detector screen-grid.
(h) Disconnect the green battery cable lead from the +67½ volt plug pin and connect it to the black lead on the same plug (+45 volts).
(i) Replace 1C7-G 1st detector with 1A7-G.
Replace 1D5-G I-F with 1N5-G.
Replace 1F7-G 2nd detector with 1H5-G.
Replace 1G5-G output with 1C5-G.
(j) Use standard 1½ volt dry battery or "Air Cell" for filament supply and two 45 volt "B" batteries for plate supply.
(k) The "Current Cutter" switch label should be removed or covered, and instructions corrected, as this switch no longer has effect.

(29) MODELS 94BK2 AND 94BT2

Alignment Data:

Before aligning these receivers, it is suggested that the following trimmer and core adjustments be pre-set to the mechanical dimensions given below:

(a) The three trimmer condensers C-30, C-3, and C-2 on rear apron should be set to maximum capacity (screws turned full clockwise) and then unscrew each about ½ turn.



Models 94BK2, 94BT2 Coil Spacing.

(b) Unscrew L-4 to its minimum inductance position (screw all way out) and then screw in 8 full turns.
(c) Unscrew L-6 to its minimum inductance position (screw all way out) and then screw in 6 full turns. Do not run this adjustment screw in too far (more than 12 to 15 turns) as the core will contact a lug on this coil at plus "B" potential causing a high resistance short and no signal (dead set).
(d) Screw L-9 all the way in and then unscrew 13 full turns (about ⅜ inch of threads exposed).

These pre-settings will assist in quicker alignment, especially if the adjustments have been tampered with or new parts installed.

When servicing these receivers, do not shift the positions of either the oscillator section (front) or antenna section (rear) on any of the four tandem push button coil assemblies, since their positions on the form governs the tracking between the two circuits. The illustrations show the proper spacings of coils.

The coils are coded with a spot of paint as follows:

Black—Stock No. 32250
White—Stock No. 32251
Red—Stock No. 32252
Green—Stock No. 32253

(30) MODEL 94BP4

Elimination of Audio Oscillation or Howl:

Should the green lead from No. 8 pin (to volume control) of the 1C5-G socket be in too close proximity to the blue lead connected to the same socket, a high pitched audio oscillation is likely to result. The two leads should be spaced from each other as far as possible. It is also important that the green lead from tuning condenser to loop antenna be dressed between the 1C5-G and 1H5-G tubes.

Additional Replacement Parts:

Stock No.	
33010	Knob—Tuning knob
32778	Knob—Volume knob (with dot)

(31) MODELS 94BP4-B, -C, -R

Technical Information and Service Data:

These models are identical to Model 94BP4 except for the material covering the case.

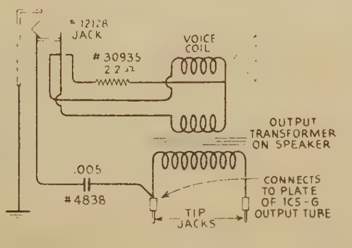
"B" indicates Buffalo covering.
"C" indicates Cowhide covering.
"R" indicates Rawhide covering.

All Service Data for Model 95BP4 apply to these models.

(32) MODELS 94BP4, -B, -C, -R

Headphone Attachments:

A jack for headphone operation can be installed quickly and easily without removing the chassis. The method outlined below permits operation with either headphones or loudspeaker, or both together. The set and loudspeaker function in the normal manner when the headphones are not plugged in the jack. When the plug is inserted part way in the jack, the loudspeaker and headphones both operate. Pushing the plug all the way into the jack disconnects the loudspeaker but leaves the headphones in operation. (A 2.2 ohm resistor is automatically connected as a dummy voice-coil load when the plug is inserted all the way.)


# 12128
JACK
VOICE COIL
# 30935
2.2 Ω
OUTPUT TRANSFORMER ON SPEAKER
.005
# 4838
CONNECTS TO PLATE OF 1C5-G OUTPUT TUBE
TIP JACKS

Model 94BP4 Headphone Attachment Circuit.

MATERIAL REQUIRED:

Stock No.	Description
(1) 12128	Jack—Telephone jack
(1) 30935	Resistor—2.2 ohm flexible type
(1) 4838	Capacitor—.005 mfd.

Also one pair of radio headphones of standard "2,000-ohm" or "3,000-ohm" type (d-c resistance) complete with plug.

PROCEDURE:

(a) Remove the back cover.
(b) Drill a 7/16-inch hole for the jack in the top of the cabinet at a point between the output tube (1C5-G) and the batteries. The top of the cabinet is approximately 7/16-inch thick and it is therefore necessary to chisel the inside of the cabinet (where the jack fits) to about 5/16-inch thickness, as otherwise the plug cannot be inserted all the way into the jack.
(c) Remove the batteries.
(d) Make connections as shown in the diagram. Leave sufficient slack in these connections so that the batteries can be installed. Keep the leads grouped together and dressed away from the tubes.

(33) MODELS 94X, 94X1, 94X2

Increase in Filter Capacitors:

Capacitor No. 30873 originally specified to comprise one 16 mfd. and 5 mfd. sections has been revised to include two 16 mfd. sections. All replacement capacitors will have the larger capacitor in the second section.

Speaker Rattle:

The mounting of the dry electrolytic adjacent to the speaker is such that the cone may possibly strike it, causing a bad rattle in the reproduction. This source should always be checked before replacing speaker parts. The electrolytic clamp can be bent so as to give ample clearance.

Residual Hum:

Residual hum level evidenced on some of these instruments, both on and between carriers, may be reduced to an insignificant intensity by making the following circuit changes:

(a) Cut off the blue lead from the dry electrolytic capacitor and disconnect it from the 6J7 cathode terminal.
(b) Install a 0.25 mfd. paper capacitor, Stock No. 30965 from the 6J7 cathode terminal to chassis ground.

Should there be a tendency for the receiver to oscillate only when tuned to a station, the lead from the 25L6G plate to the output transformer should be carefully dressed away from the 6J7 socket, preferably along the rear side of the chassis.

Model 94X Receivers above Serial No. 002600 will not require the above changes.

Models 94X1 and 94X2 above Serial No. 001400 will not require the above changes.

Instability:

The following circuit changes should be effected when cases of instability are experienced:

(a) 94X-94X1-94X2 — Change 25L6-G plate by-pass capacitor C-11 (marked 72050-569) so as to connect from the 25L6-G plate to 25L6-G heater (H) lug adjacent to cathode (K).
(b) 94X only—Change 6J7 screen by-pass capacitor C-8 (marked 72050-503) so as to connect between 6J7 screen (SG) and the 6J7 heater (H) lug adjacent to cathode (K).

Additional Replacement Parts:

Stock No.	
30873	Capacitor—Comprising two 16 mfd. sections (C13, C14)
31095	Discs — 10 celluloid protector discs for call letter markers (Models 94X1 and 94X2 only)

(34) MODEL 95X6

Distortion With Large Antenna:

Whenever distortion occurs on this instrument, it is usually possible to remedy the condition by reversing the power line plug, addition of filter capacitors to the power circuit, and decreasing the effectiveness of the antenna system by reduction of length.

(35) MODEL 95T

Fidelity Change:

Capacitor C-15, connected across the output transformer primary circuit, may be increased from .015 mfd. to .025 mfd. if accentuation of the lower audio frequency range is desired. Some production instruments will have this change already applied, therefore, circuit-note diagrams should be revised accordingly. The .025 mfd. capacitor is available as Stock No. 4870.

(36) MODEL 95T1

Technical Information and Service Data:

Model 95T1 is identical to Model 95T except for cabinet styling. All Service Data for Model 95T apply to Model 95T1.

(37) MODELS 95T AND 95T1

Microphonic Howl:

In order to minimize any "howl" that may occur at high volume, on very strong stations, the blue lead which runs from the 6A8 oscillator plate terminal to the oscillator coil should be cut as short as possible and kept separated from the chassis, tuning condenser and other leads.

Replacement Cone for Loudspeaker:

The replacement cone No. 30940 being supplied for the 95T and 95T1 loudspeaker has a modified type (circular) of center suspension providing 360 degrees of support as compared to the original two point spider. When using the present cone on original speaker, it will be necessary to add a metal center suspension plate with a felt washer between it and the speaker frame.

The metal suspension plate and the felt washer are provided with the No. 30940 cone.

(38) MODELS 95T5, 96T, 96T1, 96E

Low-Frequency Alignment:

Where additional sensitivity is desired on these single band receivers, it can be obtained by alignment of the tuning condenser at 600 KC and re-alignment of the trimmer at 1,500 KC as follows:

(a) Check alignment of antenna coil with "Tuning Wand" at 600 KC. If brass end gives increase in signal, bend rotor plates of antenna section of tuning condenser outward to produce maximum peak output. If magnetite end gives increase in signal, bend plates of oscillator section of tuning condenser to obtain maximum output.

(b) Re-align 1,500 KC antenna and oscillator trimmers in the usual manner.

(38A) MODELS 95T5, 96E, 96T, 96T1, 97X

Changes in 2nd and 3rd Production:

	1ST PRODUCTION	2ND PRODUCTION (Chassis Stamped "MOD")	3RD PRODUCTION (Chassis Stamped "M")
PUSH-BUTTON FREQUENCY RANGES			
Button No. 1 (left)	550- 980 kc	550- 980 kc	550- 980 kc
Button No. 2	650-1,080 kc	550- 980 kc	550- 980 kc
Button No. 3	650-1,080 kc	650-1,080 kc	690-1,225 kc
Button No. 4	850-1,500 kc	850-1,500 kc	850-1,500 kc
Button No. 5	850-1,500 kc	850-1,500 kc	850-1,500 kc
ANTENNA TRIMMER-BANK CAPACITANCE			
C20	100-400 mmfd.	100-400 mmfd.	100-400 mmfd.
C21	70-290 mmfd.	100-400 mmfd.	100-400 mmfd.
C22	70-290 mmfd.	70-290 mmfd.	40-250 mmfd.
C23	20-160 mmfd.	20-160 mmfd.	20-160 mmfd.
C24	20-160 mmfd.	20-160 mmfd.	20-160 mmfd.
	Stock No.	**Stock No.**	**Stock No.**
Capacitor—Antenna trimmer capacitor bank (includes C20, C21, C22, C23, C24)	31416	32066	32339
Capacitor—Electrolytic Capacitor* (C16, C17)			
5 and 5 mfd. (95T5 only)	31423	31423	32341
8 and 8mfd. (96T, 96T1, 96E only)	31424	31424	....
10 and 10 mfd. (96T, 96T1, 96E only)	....	....	32342
16 and 16 mfd. (97X only)	31479	31479	31479
Coil—Antenna coil (L1, L2)**	30894	30894	32338
Coil—Oscillator coil (L12)	31415	31415	31415
Coil—Oscillator coil (L13)	31384	31415	31415
Coil—Oscillator coil (L14)	31384	31384	32340
Coil—Oscillator coil (L15)	31383	31383	31383
Coil—Oscillator coil (L16)	31383	31383	31383

* Electrolytic capacitors Stock Nos. 31423, 31424 and 31479 have leads; Stock Nos. 32341 and 32342 have lug contacts, C16 identified by a triangle, and C17 identified by a square.

** Stock No. 30894 antenna coil has a high-frequency primary (1 ohm d-c resistance) for use with a normal-length antenna. Stock No. 32338 antenna coil has a low-frequency primary (35 ohms d-c resistance) for use with a short antenna. No. 32338 may be used as replacement for No. 30894.

FOR PARTS NOT LISTED ABOVE, REFER TO THE ORIGINAL SERVICE NOTE FOR THE PARTICULAR MODEL.

(38B) MODELS 96K, 96T2

Changes in 2nd and 3rd Production:

The 2nd and 3rd productions are identified by the letters "M" and "R" respectively after the RC number stamping. (Thus: RC-351M, or RC-351R.)

For service data applying to circuit, alignment, chassis layout, R-F and I-F coils, electrolytic capacitors, and push-button ranges of the 2nd and 3rd production runs, refer to the corresponding "M" and "R" changes in the Service Note for Model 97K.

	1ST PRODUCTION	2ND PRODUCTION (Chassis Stamped "M")	3RD PRODUCTION (Chassis Stamped "R")
PUSH-BUTTON FREQUENCY RANGES			
Button No. 1 (left), and No. 2	550- 950 kc	550- 950 kc	550- 950 kc
Button No. 3 and 4	680-1,180 kc	690-1,225 kc	690-1,225 kc
Button No. 5 and 6	890-1,500 kc	890-1,500 kc	890-1,500 kc
ANTENNA TRIMMER BANK CAPACITANCE			
C31 and C32	20-170 mmfd.	20-170 mmfd.	20-170 mmfd.
C33 and C34	70-310 mmfd.	50-310 mmfd.	50-310 mmfd.
C35 and C36	120-470 mmfd.	120-470 mmfd.	120-470 mmfd.
TUBES			
Power output tube	6F6	6F6-G	6F6-G
Rectifier tube	5W4	5Y3-G	5Y3-G
	Stock No.	**Stock No.**	**Stock No.**
Cap—Tube shield cap for 6F5	....	12110	12110
Capacitor—6.8 mmfd. (C1)	14079	14079	....
Capacitor—15 mmfd. (C1)	....	....	12896
Capacitor—Antenna trimmer capacitor bank (C31, C32, C33, C34, C35, C36)	31387	32486	32486
Capacitor—100 mmfd. (C5, C6, C7, C8)	30904	30904	....

(Continued)

	1ST PRODUCTION	2ND PRODUCTION (Chassis Stamped "M")	3RD PRODUCTION (Chassis Stamped "R")
Capacitor—109 mmfd. (C5, C6)	....	....	14262
Capacitor—120 mmfd. (C7, C8)	....	....	12404
Capacitor—180 mmfd. (C37) mounted under chassis	13003	13003	....
Capacitor—180 mmfd. (C37) in 2nd I-F trans.	....	....	14712
Capacitor—620 mmfd. (C24)	31381	31381	....
Capacitor—530 mmfd. (C24)	....	....	32492
Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), cardboard case, mounted horizontally	31371	....	....
Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), metal-case type, mounted vertically	....	32485	32485
Coil—Antenna coil "A" and "C" bands (L1, L2, L3) mounted vertically	31378	31378	....
Coil—Antenna coil "A" and "C" bands (L1, L2, L3, L43) mounted horizontally	....	....	32488
Coil—Oscillator coil "A" and "C" bands (L4, L5, L6, L7) mounted vertically (no magnetite core)	31377	31377	....
Coil—Oscillator coil "A" and "C" bands (L4, L5, L6, L7) mounted horizontally (with magnetite core)	....	....	32489
Coil—Push button oscillator coil (L37 or L38)	31385	31385	31385
Coil—Push button oscillator coil (L39 or L40)	31384	32487	32487
Coil—Push button oscillator coil (L41 or L42)	31383	31383	31383
Core—Adjustable core and stud for oscillator coil, Stock No. 32489	....	....	12800
Resistor—220,000 ohms, ½ watt (R5)	12264	12264	....
Resistor—220,000 ohms, 1/10 watt (R5)	....	....	11398
Switch—Range switch (S1)	31367	31367	32490
Transformer—1st I-F trans. (L10, L11, C5, C6)	30902	30902	14376
Transformer—2nd I-F trans. (L12, L13, C7, C8)	30903	30903	....
Transformer—2nd I-F trans. (L12, L13, C7, C8, C37, R4, R5)	....	....	14283
Dial—Dial scale (glass)	31396	31396	32356

(38C) MODELS 96K2, 96T3, 97E, 97KG, 97T, 97Y, 98X, 98EY, 98YG, U-119, U-122E, U-124, U-125

Changes in 2nd and 3rd Production:

The 2nd and 3rd productions are identified by the letters "M" or "R" respectively after the RC number stamping.

For service data applying to circuit, alignment, chassis layout, R-F and I-F coils, and electrolytic capacitors, for the 3rd production run (chassis with "R" following RC number stamping) of Models 96K2, 96T3, 97KG, 97T, U-119, U-122E, U-124, and U-125, refer to the **Service Note for Model 96E2**. This same data applies to the AC-DC Models 97Y, 98X, 98EY, and 98YG, except that the latter models have a common negative line insulated from chassis.

	1ST PRODUCTION	2ND PRODUCTION (Chassis Stamped "M")	3RD PRODUCTION (Chassis Stamped "R")
PUSH-BUTTON FREQUENCY RANGES			
Button No. 1 (left), and No. 2	550- 950 kc	550- 950 kc	550- 950 kc
Button No. 3 and 4	680-1,180 kc	690-1,225 kc	690-1,225 kc
Button No. 5 and 6	890-1,500 kc	890-1,500 kc	890-1,500 kc
ANTENNA TRIMMER BANK CAPACITANCE			
C31 and C32	20-170 mmfd.	20-170 mmfd.	20-170 mmfd.
C33 and C34	70-310 mmfd.	50-310 mmfd.	50-310 mmfd.
C35 and C36	120-470 mmfd.	120-470 mmfd.	120-470 mmfd.
TUBES			
Output tube (96K2, 96T3, 97E, 97KG, 97T, U-119, U-122E, U-124)	6F6	6F6-G	6F6-G
Rectifier tube (96K2, 96T3, 97KG, 97T, U-119)	5W4	5Y3-G	5Y3-G
	Stock No.	Stock No.	Stock No.
Cap—Tube shield cap for 6F5 (96K2, 96T3, 97E, 97KG, 97T, U-119, U-122E, U-124)	....	12110	12110
Capacitor—6.8 mmfd. (C1)	14079	14079	....
Capacitor—18 mmfd. (C1)	....	....	12722
Capacitor—Antenna trimmer capacitor bank (C31, C32, C33, C34, C35, C36)	31387	32486	32486
Capacitor—100 mmfd. (C5, C6, C7, C8)	30904	30904	....
Capacitor—109 mmfd. (C5, C6	....	....	14262
Capacitor—120 mmfd. (C7, C8)	....	....	12404
Capacitor—180 mmfd. (C37) (mounted under chassis)	13003	13003	....
Capacitor—180 mmfd. (C37) (mounted in 2nd I-F transformer)	....	....	14712
Capacitor—620 mmfd. (C24)	31381	31381	....
Capacitor—530 mmfd. (C24)	....	....	32492
Capacitor*—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), cardboard case, mounted horizontally	31371*	....	....
Capacitor*—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), metal case, mounted vertically	....	32485*	32485*
Coil—Antenna coil, A, B, and C bands (L1, L2, L3) mounted vertically	31402	31402	....
Coil—Antenna coil, A, B, and C bands (L1, L2, L3, L43) mounted horizontally	....	....	32493
Coil—Oscillator coil, A, B, and C bands (L4, L5, L6, L7, L8, L9) mounted vertically, no magnetite core	31401	31401	....
Coil—Oscillator coil, A, B, and C bands (L4, L5, L6, L7, L8, L9) mounted horizontally, with magnetite core	....	....	31951
Coil—Push-button oscillator coil (L37 or L38)	31385	31385	31385
Coil—Push-button oscillator coil (L39 or L40)	31384	32487	32487
Coil—Push-button oscillator coil (L41 or L42)	31383	31383	31383
Core—Adjustable core and stud for oscillator coil, Stock No. 31951	....	....	12800
Resistor—27,000 ohms, ½ watt (R18)	12738	12738	....
Resistor—220,000 ohms, ½ watt (R5)	12264	12264	....
Resistor—220,000 ohms, 1/10 watt (R5)	....	....	11398
Resistor—470,000 ohms, ½ watt (R1)	12285	12285	....
Resistor—1.0 megohm, ½ watt (R1)	....	....	13730
Switch—Range switch (S1, S2) for A-C models	31398	31398	32491
Switch—Range switch (S1, S2) for AC-DC models	31398	31398	32496
Switch—Push-button switch for U-125	31370**	31370**	32498**
Transformer—1st I-F transformer (L10, L11, C5, C6)	30957	30957	14376
Transformer—2nd I-F transformer (L12, L13, C7, C8)	30903	30903	....
Transformer—2nd I-F transformer (L12, L13, C7, C8, C37, R4, R5)	....	....	14283
Dial– Station selector dial scale for Models 96K2, 96T3, 97E, 97KG, 97T, 97Y, 98X, 98EY, 98YG, U-119, U-122E	31406	31406	32494
Dial—Dial scale for Models U-124, U-125	31591	31591	32495

* In all types of Model U-125, the electrolytic capacitor is Stock No. 32142. In all types of Models 97Y, 98X, 98EY, 98YG, the electrolytic capacitor is Stock No. 31576.

** Stock No. 32498 supersedes No. 31370 in U-125. See page 11 for connections.

FOR PARTS NOT LISTED ABOVE, REFER TO THE ORIGINAL SERVICE NOTE FOR THE PARTICULAR MODEL.

(38D) MODELS 96E, 96T2, 96T3, 97T

Speaker Stamped 84308-4:

The following replacement parts apply to speaker stamped 84308-4:

Stock No.	
32918	Cone—Cone and voice coil
32919	Coil—Field coil
32920	Transformer—Output transformer
31302	Plug—4-contact male plug

Voice coil impedance 2.2 ohms at 400 cycles; field d.c. resistance 1,290 ohms.

For complete speaker, order Stock No. 31442 (84308-1) listed in Service Data.

(38E) MODEL 96T1

Speaker Stamped 84327-3:

The following replacement parts apply to speaker stamped 84327-3:

Stock No.	
32586	Cone—Speaker cone and voice coil
32587	Coil—Field coil
31663	Speaker complete
32588	Transformer—Output transformer

Voice coil impedance 2.2 ohms at 400 cycles; field d.c. resistance 1,800 ohms.

Primary d.c. resistance of output transformer 500 ohms.

For complete speaker, order Stock No. 31663 (84327-3) listed above. Replacement parts for 84327-1 are listed in Service Data for 96T1.

(38F) MODEL 96T3

Speaker Stamped 72870-1:

The following replacement parts apply to speaker stamped 72870-1:

Stock No.	
13677	Cone—Cone and voice coil
13822	Coil—Field coil
13678	Transformer—Output transformer

For complete speaker, order Stock No. 31442 (84308-1) listed in Service Data.

(39) MODELS 97Y, 98X, 98EY, 98YG

Wiring Change:

The shield of cable which interconnects the 6J7 grid to the volume control, has been changed from the tone control terminal to terminal No. 3 (one nearest end of chassis) of the volume control. Such a change of return point for the shield minimizes hum and possible audio oscillation.

The correct connection is shown in the Service Data diagram.

(40) MODEL 98K

Additional Replacement Parts:

Stock No.	
32083	Screen—Dial color screen and frame, less pointer, carriage, and rods

(41) MODELS 98K, 99T, 99K, 910KG

Dial Light Diffusion Screen:

Where warpage of the light diffusion screen tends to obstruct movement of the dial pointer, it is usually possible to bend the pointer outward so that clearance is obtained. It is also possible to reduce the warpage by leaving the set in a reasonably dry place for several days. Should replacement of the screen be necessary, it may be ordered as Stock No. 32083—Dial Color Screen and Frame Assembled, less pointer carriage and rods. This part supersedes Stock No. 31306.

(42) MODELS 98K, 99K, 99T, U-126, U-128, 910KG

Intermittency and Frequency Shift:

In some chassis the temperature compensating capacitor C-28 associated with the "A" band oscillator circuit is dressed too close to the corner of lug L-17 and the insulative covering is pierced by the lug, causing intermittent operation or change of oscillator frequency. This source should be checked where trouble of such sort is evidenced; and the capacitor dressed safely away from the lug. It will be advisable to effect the same operation on any chassis being serviced for other reasons as a preventative measure.

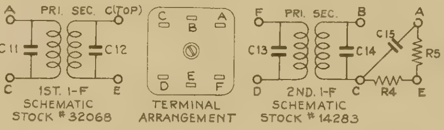
(42A) MODELS 98K, 99K, 99T, U-126, U-128, 910KG, 911K

I. F. Transformer Modification:

Later production instruments include I-F transformers having circuit and connection arrangements as shown. These transformers have a bakelite top closure as contrasted to the original completely closed metal shield. The 1st I-F is stamped No. 76456-8 and the 2nd is stamped 76456-3. For replacement purposes, these units are mechanically interchangeable with the original transformers. Connections are, however, different and details are provided in the accompanying diagram.

Note.—R-4, R-5 and C-15 (C18 in 911K) are included in the second I-F assembly, and must be removed from the external circuit.

Note.—In 911K, the 1st i-f transformer is L14, L15 and the 2nd i-f transformer is L16, L17.



Models 98K, 99K, 99T, 910KG, U-126, and U-128 Modified I-F Transformers.

1ST I-F TRANS.

A—To plate 1st detector
C—To +B high voltage
C (top)—To 6K7 I-F grid
E—To AVC circuit

2ND I-F TRANS.

F—To plate 6K7 I-F stage
D—To +B high voltage
B—To diode plate 2nd det.
E—To capacitor C-17 (C19 in 911K)
C—To R-3, 2.2 meg. resistor
A—To chassis ground

Replacements

Stock No.	
32068	First I-F Transformer
14283	Second I-F Transformer

Components of No. 32068 and No. 14283

14262	Capacitor—109 mmfd. (C11-C12)
12404	Capacitor—120 mmfd. (C13 - C14)
14712	Capacitor—180 mmfd. (C15) (C18 in 911K)
11398	Resistor—220,000 ohms (R5)
14284	Resistor—22,000 ohms (R4)

(43) MODELS 98K, 99T, 99K, U-126, U-128, U-130, HF-2, HF-4

Dial Drive Cord Tension:

Additional tension is required on the drive cord when slippage or irregular tuning action is experienced on these models. The proper remedy is to fasten a spring Stock No. 31418 to the end of the cord which is normally fixed solid to the drum, and anchor its other end to the same lug occupied by the other No. 31418 spring. Refer to service note dial drive illustrations.

(44) MODELS 99K AND 99T

Tuning Motor Connections:

On some instruments, tuning motor terminal No. 4 is grounded, C39 is omitted, and terminal No. 1 is not used.

Additional Replacement Parts:

Stock No.	
32083	Screen—Dial color screen and frame, less pointer, carriage, and rods
31312	Switch—Station selector push-button switch and bracket complete (99T only)
32229	Switch—Station selector push-button switch and bracket complete (99K only)

(45) MODEL U-104

Additional Replacement Parts:

Stock No.	
33041	Ring — Retaining ring and metal washer to mount turntable plate

Speaker No. RL-78-3 is used as a substitute for speaker No. 84202-3. For complete speaker replacement, use Stock No. 31201 (84202-3).

REPLACEMENT PARTS FOR SPEAKER RL-78-3

Stock No.	
32907	Cap—Cone center dust cap
33555	Coil—Speaker field coil
32906	Coil—Speaker hum neutralizing coil
32904	Cone—Speaker cone and voice coil
33556	Transformer—Output transformer

(46) MODEL U-106

Additional Replacement Parts:

Stock No.	
31023	Replacement mounting stud for record changer cam and gear (for installation, refer to 1937 Bound Volume, page 370, section A)
13101	Capacitor—4 mfd., complete with 2-contact male connector for use with 25 cycle motor, Stock No. 9735 (C56)
9735	Motor — 105-125 volts, 25 cycles (M1)
11212	Transformer — Power transformer, 105-125 volts, 25-60 cycles (T1)

Low-Frequency Boom:

Some instruments are compensated to give an abundance of low frequencies. Later production, however, has a modified circuit which lessens the response below 100 cycles. Should there be customer reaction to the preponderant low frequency response, the following circuit components should be checked and revised to the latest specifications per the following:

(a) Replace the 820,000 ohm resistor R-24 with one of 1.2 megohms.
(b) Replace the .01 mfd. capacitor C-54 with a 3,600 mmfd.
(c) Replace the 150 mmfd. capacitor C-45 with a 470 mmfd.

Stock Nos. 30208, 12811, and 30433 are the respective parts required.

Correction in Service Data:

Stock No. 30747 should read "Oscillator coil A Band, L20 or L21." Stock No. 30749 should read "Oscillator Coil A Band L24 or L25."

(47) MODELS U-112 AND LATE U-111

Replacement Parts:

The parts and prices listed in Service Note No. 13A—1938 include only the exceptions and revisions as referred to the standard list appearing in the U-111 Service Note No. 13—1938. For parts not listed in the No. 13A Bulletin, refer to No. 13.

(48) MODEL U-125

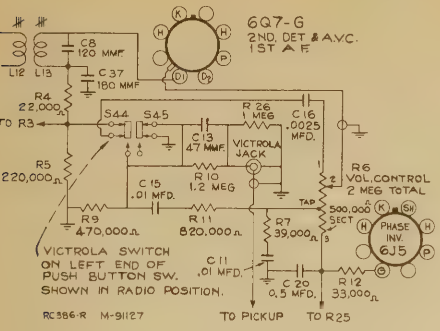
Reduction of Low-Frequency Response:

The low frequency response provided in Model U-125 may be lessened in a simple manner, where such a change is desired, by connecting a 500,000 ohm, ¼ watt resistor directly across the pickup circuit. This resistor may be installed at the terminals of the crystal cartridge under the pickup head.

Phonograph Play-Through on Radio:

Early Model U-125 radio-phono changeover circuit is such that phonograph reproduction will be heard when the push buttons are actuated for "Dial Tuning" or for "Push Button Tuning," only if the turntable is allowed to continue running and the needle is left in place. This condition should be of no importance to the customer, since there will be no occasion to have the mechanical end of the phonograph operating when "radio" is desired; however, if it is desirable to completely void the phono-cross-talk on a particular instrument, it may be done at a slight loss of high frequency response by removing **capacitor C-15** and **resistor R-11** from the circuit. Resistor R-11 has a gray body, red end, and yellow band; and is attached between the volume control tap and a terminal strip located adjacent to the tandem control assembly. Its removal effects the necessary change.

The phono switching circuit in late U-125 is changed as shown below to eliminate cross-talk.



Model U-125 Victrola Switch Circuit Used in 3rd Production

(Using Stock No. 32498 Push-Button Switch)

Motor Bracket Flexible Mount:

Mechanical hum resulting from motor vibration is generally governed by cabinet resonance, amount of torque in the particular motor, and the various mountings involved. Tolerances are maintained on each of these items so they balance out and no hum interference develops. An occasional instrument, however, may have accentuated resonance or vibration which are additive in effect. In order to remedy this condition, a more flexible cushion should be used for supporting the motor bracket to the cabinet. Replacement Stock No. 31541 will include two sets of rubber cushions, one **gray** colored and the other **black**. The gray is quite flexible, whereas the black is relatively stiff. The black is for use on the Model U-125 particularly where mechanical hum is present, and the gray is for use on other phonograph combinations where No. 31541 is specified.

(49) MODEL U-126

Additional Replacement Parts:

Stock No.	
32083	Screen—Dial color screen and frame —less pointer, carriage, and rods
31312	Switch—Station selector push-button switch and bracket complete

(50) MODEL U-128

Additional Replacement Parts:

Stock No.	
32083	Screen—Dial color screen and frame —less pointer, carriage, and rods
31312	Switch—Station selector push-button switch and bracket complete
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. long)
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. long)

(51) MODEL U-130, U-132, U-134

Additional Replacement Parts:

Stock No.	
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. long)
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. long)

(52) MODEL U-132

Dismounting Speaker:

Unless the following specified procedure is used in attempting to remove the speaker from the cabinet, some trouble may be encountered and abnormal time required:

(a) Remove two chassis mounting bolts from bottom cross rail.
(b) Remove two cross rail mounting bolts and lift out cross rail entirely.
(c) Remove four speaker mounting screws. Hole is provided in angular shelf for the removal of top screw.
(d) Place yoke of speaker in cutout at lower edge of angular shelf, tilt speaker forward and lift out.

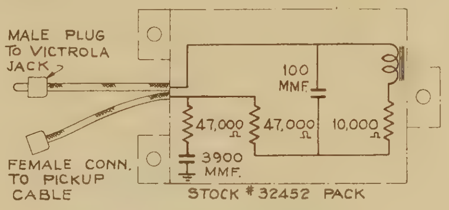
Radio Interference on Phono:

Where crosstalk from a strong local station occurs during phonograph reproduction, a remedy may be effected by one or more of the following: (1) Replace 6R7 tube, (2) check Victrola switch contacts, and (3) shield grid lead of 6R7 under chassis, extending shield as closely as possible to C-55.

(53) MODELS U-132 AND U-134

Phonograph Fidelity Revision:

More "brilliance" can be provided on record reproduction by use of a special phonograph input circuit. A complete compensation pack (Stock No. 32452) including such a circuit encased and shielded, is therefore, being made available for use where it is considered desirable.



Phonograph Compensation Pack for Models U-132 and U-134.

INSTALLATION.—Locate pack on chassis mounting panel 5 inches to right and 1 inch above bottom edge. Connect between pickup cable and "Victrola" jack on chassis. Disconnect resistors R-101, R-102, R-103, and capacitor C-104 from circuit. See that capacitor C-105 connects directly to "Victrola" jack.

Replacement Crystal Pickup:

Replacement crystal pickup for these two instruments should be ordered as **Stock No. 32632**. This part is now specified in place of the original Stock No. 31156.

(54) MODEL U-134

Needle Scratch:

Capacitor C-102, .025 mfd., associated with the H-F Tone control switch may be of the wrong value, in some cases, and "needle scratch" on phonograph reproduction will be excessive. Use of the new "Red Seal" needles will contribute appreciably to reduction of "needle scratch."

(55) MODEL 153 TEST OSCILLATOR

Stray Leakage:

Any stray signal leakage that may be noted, can be eliminated by cleaning and adjusting the spring contacts between the case and front shield.

Correction:

The circuit diagram of this instrument, shown in figure 4 of the "Instructions" should be revised to include: (1) an 82 ohm resistor in series with the 6J7 cathode; and (2) a jumper between terminal No. 3 and the contact ring of the Power-Modulation switch, "C" section.

(56) MODEL 910KG

Additional Replacement Parts:

Stock No.	
32083	Screen—Dial color screen and frame —less pointer, carriage, and rods
32229	Switch—Station selector push-button switch and bracket complete

(57) MODEL 911K

Loudspeakers:

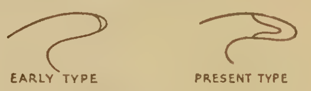
The loudspeakers used in these instruments are stamped RL-70F-4 or RL-70H-2. The replacement parts for both speakers are the same and are listed in Service Data for 911K. For complete speaker, order Stock No. 31530 (RL-70H-2).

(58) VICTROLA MECHANISM

Automatic Record Changer Adjustments:

The following points should be given special attention when servicing automatic record changers:

(a) Jamming of 10 inch records is generally related to adjustment of record separator knives. More satisfactory operation is obtainable by using a spacing of .058 inches for 10 inch records in lieu of the originally specified .055 inches. If adjustment does not give foolproof operation, replace the separator knives. The present type of separator—Stock No. 31126—has an edge as shown in the drawing.



Record Separator Knives.

(b) Needle landing in 10 inch position on a 12 inch record may be caused by sluggish action of **pickup** locating lever (17). It is advisable, for such a case to increase the strength of the pickup locating lever tension spring (30 or 34) or replace it with spring Stock No. 31875.
(c) If the needle misses the record due to excessive vibration on landing, the locating lever (14) spring (33 or 35) should be made heavier, or replaced with Stock No. 32436. If difficulty persists, use spring Stock No. 31875.
(d) Bent guide posts on the motor mounting bracket may bind against the motor board causing mechanical hum or rumble. The posts may be removed from the bracket entirely by sawing, if care is exercised in centering motor in respect to turntable spindle and its coupling.

Pickup Falling Off Record:

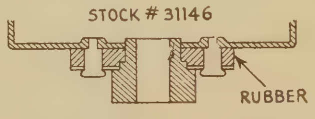
A clockwise twist in the pickup cable will tend to throw the pickup off the record. When securing the pickup lead to the cabinet, before plugging the cable into the chassis, the lead should be twisted about ¼ turn in the direction (counter-clockwise) tending to hold the pickup on the record.

Friction Finger Adjustment:

Erratic tripping action or premature tripping is generally caused by improper adjustment of the friction clutch mechanism. The friction should be just enough to prevent slippage and yet not too tight as to cause the needle to jump grooves from a lateral bind. In order to provide an ideally uniform surface of contact for friction, a stainless steel bushing is now incorporated on the trip lever friction finger Stock No. 31116. This lever is identified as part number 7 in the automatic record changer diagram. It is recommended that Stock No. 31116 be replaced wherever unstable friction adjustment has been encountered.

Turntable Flutter:

It has been found possible to prevent any flutter or ripple wow that may possibly be experienced on these Victrolas by use of a specially designed motor coupling assembly.



Phonograph Motor Coupling.

This assembly has an auxiliary flexible rubber coupling, as illustrated above, which mechanically filters the higher frequency speed variations. The Unit is covered by Stock No. 31146. It can be used to remove "flutter" or "ripple" which is reproduced as wow or speed variations occurring **several times** (4-8) per turntable revolution. Its effect on the more common type of "once-around" wow is not appreciable. When installing motor using this coupling, first assemble motor support in cabinet with motor screws loose. Move motor around until the hub of coupling No. 31146 can be pushed up around turntable spindle sleeve as a centering pilot. Tighten motor mounting screws securely. Lower coupling No. 31146 on motor shaft to normal position and tighten set screws.

(Victrola Mechanism Data continued on next page.)

(58) VICTROLA MECHANISM (Continued)

Speed Variation, Governor Type Motors:

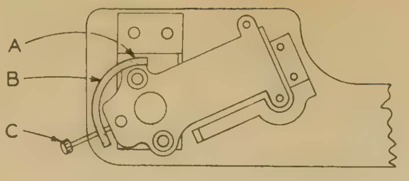
Proper oiling of the governor mechanism and governor friction pad is indispensable in maintaining stable speed. The quantity of oil must be ample and its quality consistent with its purpose. Any mineral base oil having viscosity of SAE-10 is suitable. DO NOT USE 3-IN-1 OR SIMILAR OILS OF VEGETABLE EXTRACTION.

It is essential that the felt pad which bears against the governor disc be of uniform surface and not glazed. A slight amount of "roughening" usually cures this sort of condition, however, installation of a new pad is sometimes a more positive repair.

Viscoloid Damper on Crystal Pickup No. 31156:

A viscoloid damping arrangement has been added to RCA crystal pickup cartridge Stock No. 31156. This viscoloid type supersedes the original type and will be shipped against all orders for No. 31156. The viscoloid damping further extends the range of uniform response, reduces the unavoidable effect of resonance at the extreme high frequencies, and minimizes the "needle chatter" which is inherent to all pickups.

Care should be exercised when installing this pickup to obtain the correct mechanical assembly and clamping of the viscoloid strip. The illustration shows proper method of assembly:



Viscoloid Damper on Crystal Pickup Stock No. 31156.

(a) See that end of viscoloid is securely clamped between cartridge projection and mounting bracket.
(b) Do not allow viscoloid strip to touch or bind against tone arm shell.
(c) Adjust cartridge position to give ample clearance for needle and armature.

Refelting Turntables:

It is not necessary to replace complete turntables of the type employed on Models R-93B, R-93C, U-111, U-125, U-128, U-132, etc., where the covering is damaged, since simple and economical repair is possible. The material of the covering is a pulverized felt, commonly termed "flock", which is applied during manufacture by applying a varnish undercoater to the turntable and spraying the "flock" onto the coated surface.

The "flock" and required varnish undercoater are available for service repair use and are available as standard stock items as follows:

Stock No.	
32729	Flock for automatic turntable used in Models U-125, U-128, U-130, U-132, U-134, etc. Packed in ½ pound package
32730	Flock for turntable employed on record players R-93B, R-93C, VA-20, and R-89. Packed in ½ pound package
32731	Varnish Undercoater for applying "Flock" to turntables above. Supplied in 1 pint container

To effect repair of a damaged spot, apply slight amount of undercoater and then sprinkle or dust the "flock" material over same, allowing it to dry. Blow away the excess. Should it be necessary to re-coat the entire turntable, this may best be done by placing the turntable in a sealed container or carton, after the undercoater is applied, and forming a cloud of the "flock" within the container, with an air jet, allowing it to settle uniformly on the turntable. If compressed air is available, the flock can be sprayed upon the turntable by holding a quantity in the hand and blowing a stream of air through it so as to spray it upon the turntable plate. The turntable should be spun during the operation to get best uniformity of covering.

Replacement Parts for Small-Governor and Constant-Speed Type Motors, 105-125 Volts:

MOTOR Stk. No.	NAMEPLATE MARKING Dwg. Ref.	Cycles	Field Coils and Laminations Stk. No.	GOVERNOR Stk. No.	SCREW Speed Regulator With Nut Stk. No.	Spindle and Gear Stk. No.	USED IN
11701	72444-1	50-60	31625	11703	Not Used	31629	D8-28, D9-19
11702	72444-2	25	31626	31624	Not Used	31629	D8-28, D9-19
13577	72444-3	50	31625	11703	Not Used	31629	7U2
13578	72444-4	25	31626	31624	Not Used	31629	7U2
13576	72933-1	60	31618	31623	31620	31630	7U2
14325	72933-3	60	31618	31623	31620	31631	R94
14326	72933-4	50-60	31619	11703	31620	31631	R94
14327	72933-5	50-60	31628	11703	31620	31631	R94
14800	72933-6	60	31618	31623	31620	31632	R96, U102E
30475	72933-7	50-60	31619	11703	31620	31632	U102E
9799	72986-1	60	31618	31623	31620	31633	R97, U103, U105
14465	72986-2	50-60	31619	11703	31620	31633	R97, U103, U105
31157	72986-3	60	31618	31623	31620	31634	U125, U130, U126, U132, U128, U134
31163	72986-4	50-60	31619	11703	31620	31634	U125, U130, U126, U132, U128, U134
14466	84008-1	25	31626	31624	31620	31633	R97, U103, U105
30699	84008-3	25	31626	31624	31620	31635	— — — —
31448	84008-4	25	31626	31624	31620	31636	U125, U130, U126, U132, U128, U134
31461	84323-1	60	31618	31623	31620	31621	U119, U124, U122E
31462	84323-2	50-60	31619	11703	31620	31621	U119,U124 U122E
31983	84323-3	50-60	31619	11703	Not Used	31621	8QU, 8QU1, 8QU2, M81, M82, M83
31876	84333-1	50-60	31619	11703	Not Used	31634	11QU, 12QU
31724	84388-1	25	31626	31624	31620	31773	U119, U124, U122E
32006	84415-1	DC 50-60 AC	32033	32034	31620	32035	UY122E, UY124
32135	84430-1	60	32175	Not Used	Not Used	32177	U115
32558	84484-2	60	32336	Not Used	Not Used	32337	U115
32637	84484-3	50	32650	Not Used	Not Used	32651	U115
32638	84484-4	25	32652	Not Used	Not Used	32653	U115
*32871	84564-1	60	32954	Not Used	Not Used	32957	U123
*32872	84564-2	50	32955	Not Used	Not Used	32958	U123
*32873	84564-3	25	32956	Not Used	Not Used	32959	U123

*Uses pinion gear and pin No. 32960.

Stock No.	
31616	Rotor bearing thrust screw used on governor-type models
32176	Rotor bearing thrust screw used on constant-speed motors (No. 32135, etc.)
31617	Governor end bearing bracket applies on all motors using such a bracket
31622	Metal and felt washers for turntable bearing fit all motors using same

Governor Weights and Springs are Stocked for Replacement:

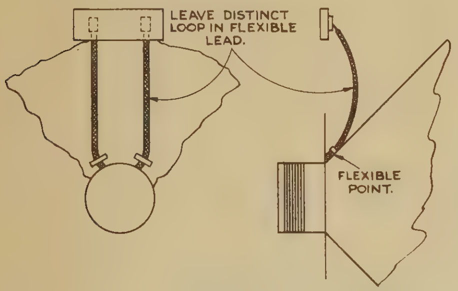
Stock No.	
32912	One weight and spring for governor assembly, No. 31623
32913	One weight and spring for governor assembly, No. 31624
32914	One weight and spring for governor assembly, No. 11703
32915	One weight and spring for governor assembly, No. 32034
34058	Speed regulator plunger and felt

When installing the governor weights and springs, always allow clearance between the spring and its retaining washers, so that the ends of the spring are free to slide back and forth; as otherwise proper governing action will not be obtained. The total clearance for spring movement should be in the order of .008 inches.

LOUDSPEAKER CONES

Installation Precautions:

The illustration and notes below give the proper method of attaching and dressing voice coil flexible leads so as to prevent a "spiraling" or "twisting" effect during operation, which may ultimately result in lead breakage.



Correct Arrangement of Voice-Coil Leads.

(a) It is important to avoid "stiffening" of the flexible lead at the ends by allowing solder to flow beyond the joint into braid.
(b) The cone end of the lead should be secured by a staple over a "flexible" point of the lead.
(c) See that the terminal strip or outer ends of the leads are secured in approximately the same plane with the stapled ends on the cone.
(d) A definite "loop" or "slack" must be provided in the leads; and must be in the plane of motion as illustrated above.
(e) The flexible leads on replacement cones are cut to the proper length, so as to allow for correct forming of a loop when one turn is made around soldering lug at the extreme end.

Cleaning Speaker Air Gaps:

Blowing or wiping of metal particles from the air gaps of electrodynamic loudspeakers may be facilitated by applying 110 volts A-C to the field coil. The A-C will eliminate any residual magnetic force that may be present and permit easy removal of the particles. It is very important to carefully inspect and clean the air gap when installing a replacement cone, or when making repairs to the speaker.

5-6-7-8 TUBE MODELS

Limitation Push-Button Ranges:

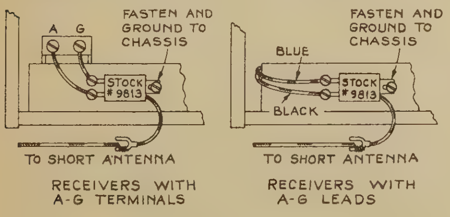
Occasionally a receiver is found where the lower frequency limit specified on a particular button cannot be reached. The alternative button having the same specified range will cover properly and should be employed to tune the desired station falling at the low frequency limit.

USING SHORT ANTENNA

On 5-6-7-8 Tube Models Designed for Normal-Length Antenna:

Certain RCA receivers have a broadcast-band antenna primary coil of only a few turns, with a d-c resistance of only one or two ohms: Such receivers are designed for use with a normal-length antenna of 60-100 feet. It is also essential that a ground connection be used. The maximum results from these sets will not be obtained when used with a very short piece of wire or makeshift antenna as is sometimes employed on temporary demonstration. However, performance under the latter conditions can be greatly improved by using a standard RCA receiver coupling unit, Stock No. 9813, connected as shown. It is to be especially noted that this unit is not required for an installation where a normal antenna is used.

On receivers with small antenna coils, in weak signal or remote areas where signal pickup predominates in importance to local noise reduction, it is best not to employ the Magic Wave, Master, or similar antenna kits employing receiver coupling transformers. The RCA No. 395 Antenna is very suitable on these sets and provides good signal transfer as well as reasonable noise reduction.



TO SHORT ANTENNA
RECEIVERS WITH A-G TERMINALS

TO SHORT ANTENNA
RECEIVERS WITH A-G LEADS

Using Short Antenna on Receivers with Small Antenna Coil.

ELECTROLYTIC CAPACITORS

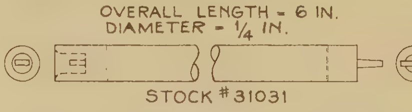
Stock No. 5212, 11203, 14531:

The wet electrolytic capacitors employed in filter circuits are too frequently replaced because of an apparent "shorted" condition. A "short circuit" in capacitors of this type is very unusual, and results only when severe mechanical damage is done to the unit. The deficiency which has the nature of a "short" is generally a case of **excessive leakage** current through the capacitor due to its not being formed. Abnormal shelf life or long periods of standing idle in receivers are responsible for this temporary loss of "forming." An unformed unit will form properly in the receiver, if the d-c voltage of the rectifier is maintained for sufficient time. As much as twenty minutes should be allowed for a capacitor to be restored to normal leakage current, which indicates correct formation. The current will be high initially and will gradually decrease with the time of voltage application. Where a 5Z4 or 5W4 is used as rectifier, it is advisable to install a 5T4 during the forming process to provide an ample source of current. The capacitors may also be conveniently formed outside of the receiver, on a well regulated source of the proper d-c voltage. The various electrical characteristics of commonly used capacitors are as follows:

Stock No.	DC Forming Voltage	Max. Operating Voltage DC	Max. Leakage Current MA	Capacity MFD
5212	300	300	3	16
11203	475	440	3	10
14531	475	460	4	25

ALIGNING TOOL NO. 31031

For Magnetite Cores and Compression Trimmers:



This tool is made of durable bone fiber tubing with a regular screw driver blade on one end for the ordinary compression type trimmers, and a recessed blade on the other end for the magnetite core trimmers.

The recessed blade permits easy engagement of the tool with the trimmer screw, particularly where the screw is difficult to reach, prevents the tool from slipping during adjustment, and obviates likelihood of breaking the screw. This tool is especially handy for adjusting push-button receivers, where both compression and magnetite trimmers are employed.

NOISY VOLUME CONTROLS

Caused by Excessive d-c Current:

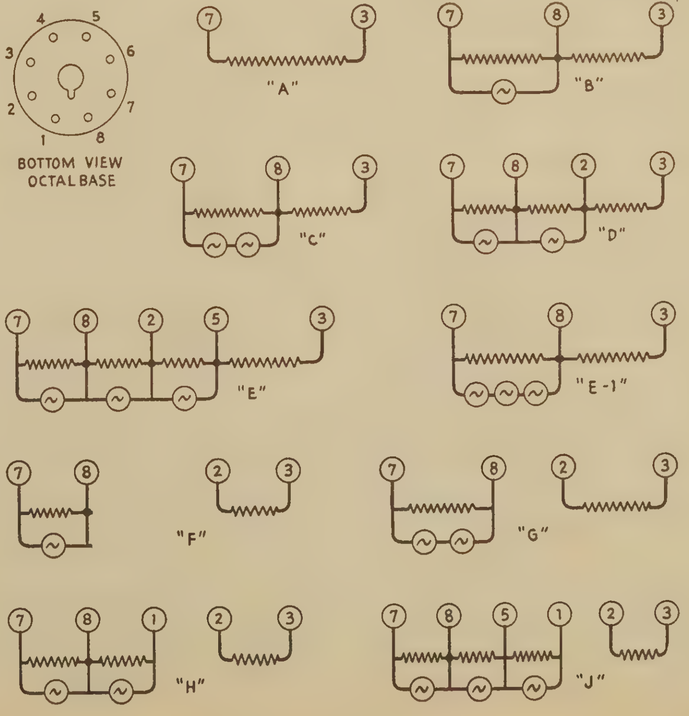
Volume controls are oftentimes unnecessarily replaced because of apparent noisy operation. Inasmuch as such noise is frequently due to excessive d-c grid current flowing in the volume control and first audio stage, it is good practice to replace or test the tube associated with the volume control to assure that any abnormal grid current condition does not exist, before exchanging the volume control.

BALLAST TUBES

RMA Numbering System:

The internal connections and voltage characteristics of ballast tubes used in AC/DC receivers are indicated by the type number and its arrangement. As an example of the RMA coding, note type BK-36-C.

"B" indicates that a ballast section is provided for one or more pilot lamps.
"K" means that the pilot lamp(s) is a 0.150 amp., 6.3 volt type (Mazda 40 or 47).
"36" implies that a 36 volt drop occurs across the entire unit in normal operation with pilot lamps connected. This rating will always be an approximate multiple of 6.3.
"C" or the final letter refers to the terminal arrangement; the present systems are shown in the accompanying diagram.



G-8 REMOTE CONTROL

Adapting G-8 Control to 1938-39 Models:

The assembly of the G-8 Remote Control Unit can be revised readily, so that it is equivalent to the newer model G-8 A, and may be used with 1938-39 electric tuning receivers. It is only necessary to void the "latching" feature of the push buttons, by either removing the latch plates entirely or securing them in the open position. Details of the required changes are as follows:

(a) Remove contact and latch assembly from case of G-8 by taking out six screws holding base.
(b) Disconnect link bar between the two latch plates.
(c) Grind or file off outer ends of studs holding the latch plates to support bracket.
(d) Remove latch plates and discard. Reassemble control box.
(e) Strip additional 5 inches of braiding from receiver end of remote cable, and shellac braid ends to prevent fraying.

As an alternative for operations (b), (c), and (d), the latch plates may be secured in the complete "open" position by tying the lower lever of the latch plate nearest cable to the support bracket.

"POPPING" INTERFERENCE

Reduction of Static Discharges, AC-DC Receivers:

Where AC/DC receivers are used with an external antenna which is exposed to steam, smoke, snow, or other influences of similar nature, a static accumulation may occur on the antenna and will produce objectionable interference by discharge to ground, chassis or other nearby objects. This condition can be obviated by connecting a 1 megohm resistor in parallel with the isolating capacitor which is normally used in series with the antenna input, thus maintaining the antenna at ground d-c potential at all times.

MOLDED MICA CAPACITORS

Tolerance and Identification:

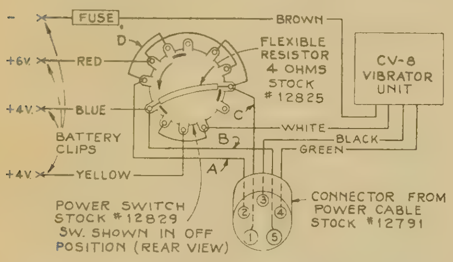
All replacement molded mica toothpick capacitors are built to the minimum tolerance specification, so that only one unit of each particular value must be stocked; this unit being usable in all applications irrespective of the tolerance requirement. Some capacitors removed from instruments will therefore have numerical markings that do not correspond to those of the replacement supplied. Molded mica capacitors now being used have markings that correspond to their capacitance value in micromicrofarads. Example: 270 indicates 270 mmfd.

Miscellaneous Data for Instruments Prior to 1938 Bound Volume

MODELS 6BT, 6BK, 8BT, 8BK

Operation With CV-8 Vibrator Unit:

It is possible to use the standard Model CV-8 vibrator unit in conjunction with the above 2-volt battery models for 6-volt operation by effecting the following changes, employing the cable connector and power switch which are part of the existing 2-volt receivers:



-
FUSE
BROWN
D
FLEXIBLE RESISTOR 4 OHMS STOCK #12825
CV-8 VIBRATOR UNIT
+6V.
RED
+4V.
BLUE
C
WHITE
BATTERY CLIPS
B
BLACK
GREEN
A
+4V.
YELLOW
POWER SWITCH STOCK #12829 SW. SHOWN IN OFF POSITION (REAR VIEW)
CONNECTOR FROM POWER CABLE STOCK #12791
1
2
3
4
5

Circuit for Using CV-8 Vibrator Unit with Models 6BT, 6BK, 8BT, 8BK.

(a) Remove connector (Stock No. 12791) from battery cable of 2-volt set and install it in place of connector on CV-8 cable, connected as shown above.
(b) Remove all external connections from power switch (Stock No. 12829) and wire CV-8 cable to switch as shown. Jumpers on switch may be left intact, except add "D."
(c) Add 4-ohm resistor (Stock No. 12825) across 2-volt circuit at switch as shown.

Note that A, B and C are new leads which must be added to cable assembly.

CV-8 PAK-O-PWR

Failure to Start:

Erratic action of the vibrator or its failure to function, after the unit has been standing idle for an extended period in the presence of moisture or high atmospheric humidity, may be due to a temporary oxidation of a small spot on one of the primary tungsten contacts. The condition can be readily and satisfactorily rectified by apply **six volts** (instead of normal four volts) from a fully charged battery to the vibrator input for approximately 30-60 seconds. To do this, connect the negative (— six volts) of six volt battery to the "Brown" lead, and the positive (plus six volts) to the "yellow" lead; disconnect seven-contact plug from receiver, and interconnect its terminals No. 1 and No. 2 (yellow and white) so as to close the circuit. Filament leads, Red and Blue, should not be attached to battery during application of higher voltage to vibrator. This procedure produces momentary overheating of the contacts, and thoroughly cleans their surfaces so that normal operation results.

MODELS 9T, 9K2, 9K3

Output Tube Failure:

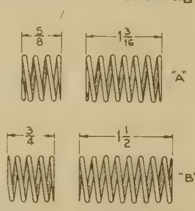
Replacement of 6L6 and 5Z4 tubes, power transformers and overheated electrolytic capacitors is sometimes occasioned by "leakage" of the audio coupling capacitor of the 6L6 grid circuit. Such leakage causes the 6L6 grid to assume a positive bias resulting in excess plate current, which in turn causes damage to the rectifier, filter and transformer. This source of failure should be carefully checked in cases where other causes are not definitely isolated; and the capacitor replaced if necessary.

MODEL D-22-1

Record Damage:

Records containing heavy bass response in the region from 50 to 80 cycles may be subject to damage from groove or wall breakdown as a result of mechanical-acoustic feedback into the pickup unit. Subsequent playing of records so damaged results in abnormal distortion during the low frequency passages. This condition can be rectified by removing or displacing the mechanical and electrical resonances, and the undesired mechanical coupling that contribute either singly, or which may be accumulative. The following operations should be carried out to effect the necessary remedy:

(a) Install rumble filter Stock No. 12037 adjacent to phono compensation pack, connecting it between terminals No. 2 and No. 6. Orient filter for minimum hum pickup.
(b) Check lateral movement of tone arm and adjust its associated parts to prevent any tendency to bind. The tone arm rear lateral bearing, the twist of the pickup cable where it passes through this bearing, and the adjustment of the friction finger should be especially noted.
(c) The pickup unit should be examined and adjusted to assure that it is correctly centered, that the attachment of centering spring to the armature is secure, and that the clamping of the spring to the magnet assembly is solid.
(d) The motor mounting springs should have the proper flexibility. To be certain that these are correct, use Stock No. 4562 which includes the following:



Model D-22-1 Spring Combinations.

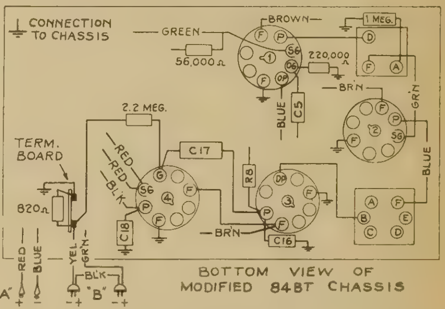
Spring combination "A" corresponding to dimensions shown should be installed on each of two motor mounting studs supporting field coil assembly of motor (nearest rear of cabinet) with ⅝-inch spring above motor board and 1-3/16-inch spring below.

Spring combination "B" corresponding to dimensions shown should be installed on motor stud at end of gear case (nearest front of cabinet) with ¾-inch spring above motor board and 1-½-inch spring below.

(e) The motor board mounting springs should have the proper flexibility and be assembled correctly. The specified springs are Stock No. 3763. The ¾-inch (length) springs should be installed below the motor board, and the others installed above.
(f) See that damaged records are removed from customer's collection as these records will continue to produce distortion when played on the corrected instrument.

MODEL 84BT

Adaption for 1½-Volt Operation:



Model 84BT Modifications for 1-½ Volt Operation.

MATERIALS REQUIRED:

1—RCA-1A7G
1—RCA-1N5G
1—RCA-1H5G
1—RCA-1C5G
4 Octal Sockets Stock No. 31251
1—820 ohm Resistor Stock No. 14076
1—56,000 ohm Resistor Stock No. 12286
1—220,000 ohm Resistor Stock No. 12264
1—2.2 megohm Resistor Stock No. 12679
1—1 megohm Resistor Stock No. 13730

(a) Remove all connections from tube sockets; replace sockets with octal type (Stock No. 31251).
(b) Connect octal sockets in accordance with socket connections on the accompanying diagram.

Note that the following circuit changes are necessary: All symbols refer to designations in 84BT Service Notes.

(c) Replace oscillator grid resistor (R-1) with a 220,000 ohm resistor (Stock No. 12264).
(d) Replace the screen dropping resistor (R-2) with a 56,000 ohm resistor (Stock No. 12286).
(e) Connect I-F screen grid to terminal "F" on first I-F transformer (B+) instead of to first detector screen grid.
(f) Remove R-9 and C-15; connect R-8 (1 megohm) to 2nd detector plate terminal.
(g) Replace output grid resistor (R-10) with a 2.2 megohm resistor (Stock No. 12679).
(h) Remove R-6, all "C" battery leads, and yellow lead from R-6 to R-5.
(i) Connect a 1 megohm resistor (Stock No. 13730) from terminal "A" on the first I-F transformer to chassis.
(j) Remove the first "B" battery plug and the blue lead and fuse which connect it to the negative "A" terminal.
(k) Add a fourth wire to the battery cable, connecting to the yellow lead on the second "B" battery plug, and through an 820 ohm resistor (Stock No. 14076) to chassis. This resistor may be mounted on the terminal board formerly used for R-6. The low end of the 2.2 megohm output grid

resistor should connect to the battery side of the 820 ohm resistor.

(l) Remove dial lamp and brown connecting lead.

(m) Insert new tubes as follows:
  1A7-G 1st detector-oscillator
  1N5-G I-F amplifier
  1H5-G 2nd detector, A-F, A-V-C
  1C5-G Output

(n) Replace tube shields.

(o) Realign according to instructions in 84BT Service Notes.

(p) Make alterations on rating label and instruction sheet to indicate the change of battery supply and tube complement.

(q) Use 1.5 volt dry cell or 1.4 volt "Aircell" for "A" supply; and two 45 volt batteries for "B" supply. No "C" batteries are required.

MODEL 85T8

Service Data Correction:

In replacement parts list, Stock No. 11203 capacitor should read C24 instead of C12.

Stock No. 30577 capacitor pack should read C12-C26 instead of C24-C26.

MODELS 87K1, 87K2, 87T2

Correction in Service Data:

Stock No. 30747 should read "Oscillator Coil A Band L-20 or L21". Stock No. 30749 should read "Oscillator Coil A Band L-24 or L-25".

MODELS 87X, 87Y, 87EY

Increased Sensitivity:

The I-F circuits of these instruments are aligned in the factory to produce a good balance between sensitivity and tone quality. In localities where sensitivity is of greater importance than tone, an increase can be obtained by realigning the I-F stages, using the output meter method. A battery operated test oscillator should be used as the source of signal, with its output connected thru a capacitor to the 6A8 grid, and its ground lead attached to the "G" terminal of the receiver input. The usual output meter or indicator must be connected either across the speaker voice coil or output transformer primary. It is preferable, if convenient, to use a 1/1 isolation transformer in the AC power circuit. Each I-F trimmer should then be adjusted to produce maximum "peak" output.

MODEL R-93A

Revised Motor Components:

The various parts of the turntable and rotor assembly have been assigned separate stock numbers and are now available for service purposes as follows:

Obsoleted Parts

Stock No.	
30240	Rotor—Laminations and Turntable complete for 60 cycle operation
30376	Rotor—Laminations and Turntable complete for 50 cycle operation
30241	Rotor—Laminations and Turntable complete for 25 cycle operation

Superseded By

33003	Lamination—Rotor laminations, frame and shaft assembled, for 60 cycle operation
33004	Lamination—Rotor laminations, frame and shaft assembled, for 50 cycle operation.
33005	Lamination—Rotor laminations, frame and shaft assembled, for 25 cycle operation
30242	Turntable—Finished turntable plate
30243	Cap—Turntable spindle cap
30392	Mounting—3 rubber spacers and 1 rubber bushing for mounting turntable plate

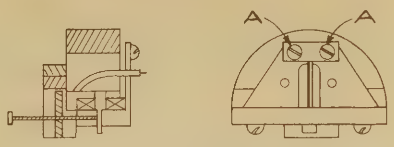
MODELS R-93 and R-93A

Replacement Pickup Mechanism No. 32205:

This pickup mechanism is available for replacement on record players R-93 and R-93A. It is identical in construction to Stock No. 31100, described below, except that the magnet is chrome instead of cobalt, and the output is approximately 0.4 volts.

R-93, R-93A, R-93-2, R-94, R-96, D7-7, 7U, 7U-2, U-101, U-102E, U-103

Replacement Pickup Mechanism No. 31100:



Replacement Pickup Mechanism Stock No. 31100 and 32205.

A service replacement pickup mechanism for the "midget" type tone arm can now be obtained by ordering Stock No. 31100—Pickup Unit, less Tone Arm. This unit is usable in the models listed above.

Latest design features, including a simple and substantial centering adjustment, are incorporated in this unit. The cobalt magnet employed assures sufficient output (0.6 volts average) and correct impedance (1,400 ohms) for all of the specified applications. To adjust, loosen the screws "A-A", move the needle so that the armature is centrally aligned between the pole pieces, and then re-tighten the screws. Check to see that the armature blade is not striking the coil form and that the centering spring is securely attached to the armature.

MAGNETIC PICKUP MARKINGS

In order to simplify the identification of pickups and proper stock numbers for their components, the various pickup mechanisms to be manufactured for replacement in the future will have stampings similar to the following:

PU 32205	The first group of numerals indicates the stock number of the pickup assembly.
A 14295	The second group of numerals gives the stock number of the armature.
C 11732	The third group of numerals identifies the stock number of the coil.

This marking system is being effected at once on pickups No. 32205, No. 31100, No. 32228 and No. 12538. It will be continued on any additional replacement pickups to be produced.

MODEL U-101

Revised Motor Components:

The various parts of the turntable and rotor assembly have been assigned separate stock numbers and are now available for service purposes as follows:

Obsoleted Parts

Stock No.	
30388	Rotor—Laminations and Turntable complete for 60 cycle operation.
30389	Rotor—Laminations and Turntable complete for 50 cycle operation
30390	Rotor—Laminations and Turntable complete for 25 cycle operation

Superseded by

33003	Lamination—Rotor laminations, frame and shaft assembled, for 60 cycle operation
33004	Lamination—Rotor laminations, frame and shaft assembled, for 50 cycle operation
33005	Lamination—Rotor laminations, frame and shaft assembled, for 25 cycle operation
30391	Turntable—Finished turntable plate
30393	Cap—Turntable spindle cap
30392	Mounting—3 rubber spacers, and 1 rubber bushing for mounting turntable plate

MODELS U-107, U-109, 810K1, 811K, 813K, 816K

Loudspeaker Jumper Cable:

The jumper cable assembly used on later instruments is available in complete form, including the male plug and female connector, as Stock No. 30678. The cable is 25 inches long.

MODEL ACR-111

Replacement Belt:

A revised design of drive belt is available as Stock No. 14452. It is advisable to effect a replacement, using this part, if difficulty is experienced in minimizing slippage.

MODEL 150 TEST OSCILLATOR

Frequency Drift:

Two simple circuit modifications can be made to materially reduce frequency drift of the fixed oscillator stage of the Model 150 oscillator, as caused by high humidity and temperature variations. These modifications should be accomplished as follows:

(a) Replace capacitor C-26 with a Stock No. 33365 capacitor, which has a high negative temperature coefficient. Since C-26 is located inside the fixed oscillator assembly, it is necessary to remove the shield from this assembly in order to effect the change.

(b) Remove the shielded cable which is connected between the fixed oscillator coil and S3-C17, and replace this lead with an open lead, preferably rubber covered.

The negative coefficient capacitor gives considerably less dependence on temperature, and the open wire gives less dependence on humidity; and therefore, bring about good stability under adverse conditions.

MODEL ACR-155

Rectifier Failures:

It is to be noted that the 5W4 tube may fail during the first few minutes of initial operation if the set has been unused or left standing idle for a protracted period. This condition results from filter electrolytic capacitors which have temporarily lost their capacitance or become "unformed." A very high surge current (beyond capacity of 5W4) is drawn by these capacitors, if in such a condition. In order to obtain correct operation, and proper forming of the capacitors, a 5T4 tube should be installed in the 5W4 position. It may be necessary to allow as much as 20 minutes after the set has been first turned "on" for the capacitors to form. Heating of the unit is normal during this period. The forming will be maintained indefinitely if the receiver is used frequently.

MODELS 262 AND 263

Replacement Driver Transformer No. 7832:

New shipments of the replacement audio driver transformer for Models 262 and 263 will be found to have a revised coil design, in that the primary d-c resistance equals 1,350 ohms and the secondary total d-c resistance is 2,000 ohms. In addition to the coil revision, these transformers have been manufactured and tested by the latest methods to withstand the stringent conditions of humid climate and high temperature. An extra connection has also been provided on the unit for equalizing the primary and core potentials so that electrolysis between these parts will be reduced. This additional lead is colored **RED-GREEN**; and it should be connected to plus "B" (green lead) of the primary circuit.

MODELS 811K, 813K, 816K

Scissors Gear:

In servicing chassis from any of these instruments or similar types, it is advisable to adjust the reversing switch of the electric tuning mechanism as low as possible to assure that it is positively actuated at the ends of the tuning range. Failure to reverse may result in a damaged "scissors gear" on the tuning condenser shaft. A satisfactory repair of this gear can be made, where necessary, as follows:

(a) Remove compression springs from gears.

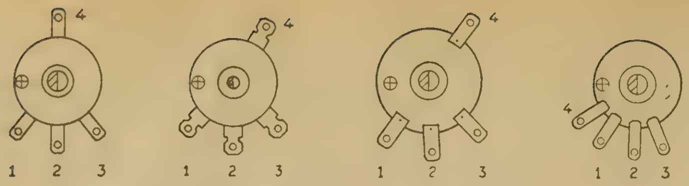
(b) Mesh and align both gears accurately with pinion gear.

(c) Solder the movable and fixed gears together at each end.

(d) Re-adjust mesh with the pinion and run through cycle several times to wear-in any irregularities.

(e) Re-adjust reversing switch as suggested; replacing same if questionable.

Stock No. 32167 covers the **Tuning Condenser**, less gear assembly, for models 811K, 812K, U-109, and U-108. This condenser is being made available in lieu of No. 14727.



Terminal Arrangement, Stock No. 14335 Volume Control.

MODEL 812X

Volume Control:

Stock No 30596 Volume Control is being superseded by Stock No. 14335. Electrical and mechanical details remain unchanged.

MODELS 813K, 816K

Driver Transformer:

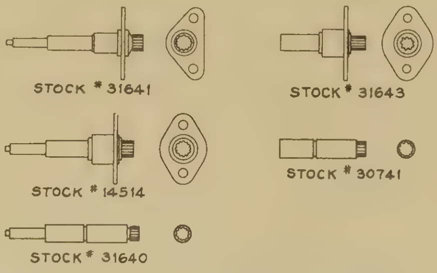
The resistance values shown on the driver transformer windings are incorrect. Primary resistance should be 500 ohms, and the secondary resistance 160 ohms.

1937-38 RECEIVERS

Vernier Tuning Drives:

Three types of vernier drives (Stock No. 31641, 31640, 14514) were employed on tuning condensers of the 6-10 tube receivers. These drives are not interchangeable and it is therefore essential, where replacement is required, to order the correct part. Identification may be established by comparison with the illustrations. These drives are used on the following models:

86E
87K
810T
812X
86T
87X
810T4
U-105
86K
87E
810K
U-107
87T
88K
810K1



Vernier Tuning Drives for 1937-38 Receivers.

Note that Stock No. **14514** supersedes Stock No. 14364.

Two types of vernier drives (Stock No. 31643, 30741) are to be found on Models 87K1, 87T2, 87K2 and U-106. When ordering replacements, the correct part may be identified by comparison with the drawings.

STOCK NO. 14335

Volume Control Connections:

The Stock No. 14335, volume control, as used in several models of the 1937-38 line may have any one of four constructional arrangements.

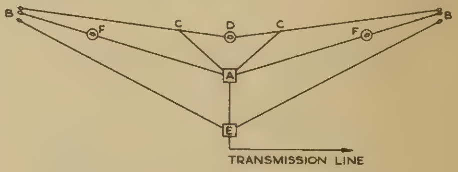
The different controls are, however, interchangeable, both electrically and mechanically. Terminal locations are shown in the diagram. Terminal No. 1 is the low potential end of unit; terminal No. 2 is the wiper arm; terminal No. 3 is the high potential end of the unit; and terminal No. 4 is the tone-compensation tap. The illustrations are as viewed from the front of the control.

SPIDER WEB ANTENNA

Dimensions:

The following information giving correct dimensions of the Spider Web Antenna will enable an accurate check and correction where difficulty is encountered in obtaining the proper suspension. Measurements are given from end loops of leads to centers of holes in insulators.

AB—19 feet.
AC—5 feet, 11½ inches.
CD—4 feet, 6 inches.
CB—13 feet, 8 inches.
AF—12 feet, 6 inches.
EB—20 feet, 5 inches.
FB—6 feet, 6 inches.
DB—18 feet, 2 inches.
AE—4 feet, 8½ inches.



Spider Web Antenna Dimensions.

RCA Victor

MODEL HF-1

Eight-Tube, Single-Band, Electric-Tuning, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 11—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	540-1,550 kc

2 Stations between approx. 540-1,160 kc (buttons 7 and 8)
3 Stations between approx. 630-1,230 kc (buttons 4, 5, and 6)
3 Stations between approx. 780-1,550 kc (buttons 1, 2, and 3)

Intermediate Frequency	455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8	First Detector—Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6R7	Second Det., A-F Amp., and A.V.C.
(4) RCA-6J5	Driver
(5) RCA-6J5	Phase Inverter and Driver
(6) RCA-6F6	Power Output
(7) RCA-6F6	Power Output
(8) RCA-5T4	Full-Wave Rectifier

A socket is provided for an RCA-6U5 or 6G5 "Magic Eye" Tuning Tube, to facilitate adjustments for electric tuning.

Pilot Lamp	Mazda No. 46, 6.3 volts, 0.25 amps.

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 115 watts
Rating B	105-125 volts, 25-60 cycles, 115 watts

POWER OUTPUT

Undistorted	10 watts
Maximum	12 watts

LOUDSPEAKER

Type	12-inch Electrodynamic
Impedance (v.c.)	2.25 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions	32⅞ inches	22¼ inches	13⅛ inches
Chassis Base	3¼ inches	14⅞ inches	9⅞ inches
Over-all Chassis Height			7⅞ inches

Weight	46½ pounds (net), 59½ pounds (shipping)
Operating Controls	(1) Volume Control, (2) Power "off" push button, (3) Eight station push buttons, (4) Fidelity and Phono switch.

General Description

Model HF1 is designed especially for critical music lovers in metropolitan areas where a number of strong broadcast stations, with high-quality programs, are available. It has comparatively low sensitivity, and is not intended for use beyond a distance of 100 miles from a strong first-class station. (Any high-fidelity receiver is subject to cross-talk and other types of interference when used for reception of weak distant stations.)

Model HF1 has Electric Tuning for eight stations in the standard broadcast range, thus ensuring correct tuning at all times. It has a six-position selectivity-fidelity-phonograph switch, which permits selection of sharp, medium, and broad tuning (corresponding to narrow, medium, and full-range audio response). In the full-range position, the reproduction is faithful from 50 to 7,000 cycles. The purpose of the six positions on this switch is explained in a table on page 3.

The No. 6 position (knob turned full clockwise) on the fidelity switch provides minimum selectivity and maximum fidelity. This position of the switch may be used for full-range reproduction of the majority of local stations, but occasionally (due to the present 10 kc station spacing), an adjacent channel signal will cause a 10 kc beat or "monkey chatter." Turning back the fidelity switch to position 5, 4 or 3 will eliminate this condition, at the expense of high-fidelity reproduction. (An example of possible "monkey chatter" is found in the case of WOR at 710 kc, and WLW at 700 kc.)

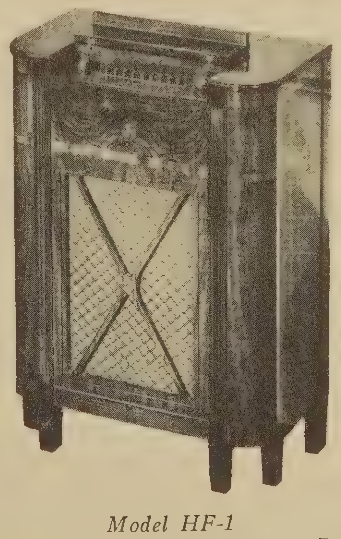
Features of design include magnetite-core oscillator coils, and a special temperature-compensating capacitor (C26), for permanence of Electric Tuning adjustments; two tuned circuits between the antenna and the 1st-detector; two special tapped i-f transformers between the 1st-detector and i-f tube; magnetite-core i-f transformers; automatic volume control; aurally-compensated manual volume control; phonograph jack; phase inversion; push-pull output; inversed-feedback; and twelve-inch electrodynamic loudspeaker. There are three adjustments for each push button (antenna, link circuit, and magnetite-core oscillator coil).

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Precautionary Lead Dress and Replacement of Parts

1. The green lead from the antenna coil to the switch, and the green lead from the link coil to the switch, should be dressed away from the oscillator coils, and free of other leads, chassis, and parts.
2. When replacing a dual trimmer, it must be installed so that the top plate (to which the adjustment screws make contact) is the ground side. This is particularly important on C39-C40, and C47-C48, because the sections of these trimmers are of different capacity range and must be correctly oriented in the receiver. Grounding the top plate takes care of this.
3. Maintain color coding on output transformer (T2) as shown in the schematic diagram. This is necessary in order to obtain correct inverse-feedback action.



Model HF-1

First Edition

Printed in U. S. A.

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I-F Alignment Procedure

Cathode-ray Alignment is the recommended method for Model HF1. Connections for the oscillograph are shown in the chassis drawing.

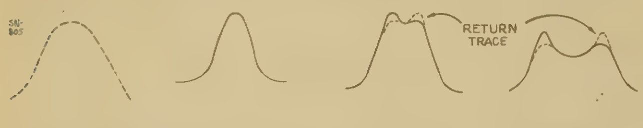
Output Meter Alignment.—If an output meter is used, connect it across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment".

Push in button 8, and adjust the No. 8 trimmers and core to a quiet point near 600 kc. Leave the button pushed in for the following operations:

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn Fidelity switch to—	Adjust the following for max. peak and symmetry—
No. 1	6K7 I-F grid cap, in series with .001 mfd.	455 kc (20 kc sweep)	— — — —	L12 and L13 (3rd I-F transf.) (Refer to curve "A")
No. 2	6A8 1st-det. grid cap, in series with .001 mfd.	455 kc (20 kc sweep)	Position 4 (from left)	Turn L4 and L5 (1st I-F) out as far as possible. Peak L8 and L9 (2nd I-F), and then L5 and L4. Readjust L8 and L9 slightly if necessary. (Refer to curve "B")
No. 3	Turn selectivity switch to position 5. Response should be like curve "C".			
No. 4	Turn selectivity switch to position 6 (full clockwise). Response should be like curve "D".			
No. 5	Follow "Adjustments for Electric Tuning".			



Curve "A" Input to I-F grid.

Curve "B" Input to 1st-det. grid, fidelity switch at position 4 (from left).

Curve "C" Input to 1st-det. grid, fidelity switch at position 5 (from left).

Curve "D" Input to 1st-det. grid, fidelity switch at position 6 (full clockwise).

Figure 1—Approximate I-F Response Curves

Adjustments for Electric Tuning

1. Make a list of the desired eight stations, arranged in order from high to low frequencies. It is preferable to select strong local high-quality stations within a radius of 100 miles.
2. Insert an RCA-6U5 or 6G5 Magic Eye tube in the six-prong socket on the chassis. Use an insulated screwdriver or alignment tool (such as RCA Stock No. 31031) for all adjustments. LEAVE THE FIDELITY SWITCH IN POSITION 3 OR 4 WHILE MAKING ADJUSTMENTS FOR ELECTRIC TUNING.
3. Remove the antenna lead-in from the "A" terminal and wrap it once around the green lead to the top cap of the 6A8 tube. (This provides capacity coupling between the antenna and the 6A8 grid.)
4. Push in button No. 1 and turn oscillator core No. 1 to bring in the first station on the list. Adjust the core carefully for peak output as indicated by the Magic Eye. Adjust link trimmer No. 1 for max. output.
5. Remove the antenna lead-in from the 6A8 grid lead and connect the lead-in to the "A" terminal. Adjust antenna trimmer No. 1 and link trimmer No. 1 for peak output as indicated by the Magic Eye.

(Clockwise rotation of cores and trimmers tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies.)

6. Push in button No. 2. Adjust oscillator core No. 2, antenna trimmer No. 2, and link trimmer No. 2 for the second station in the same manner.
7. Follow the same procedure for the remaining stations.
8. After tuning in eight stations as specified above, leave the antenna lead-in connected to the "A" terminal, and carefully readjust each of the oscillator cores for peak output on the respective stations.
9. After the set is installed and connected to the customer's antenna, make a final readjustment of the antenna and link trimmers.
10. The Magic Eye should be removed from the chassis after completion of the electric-tuning adjustments.

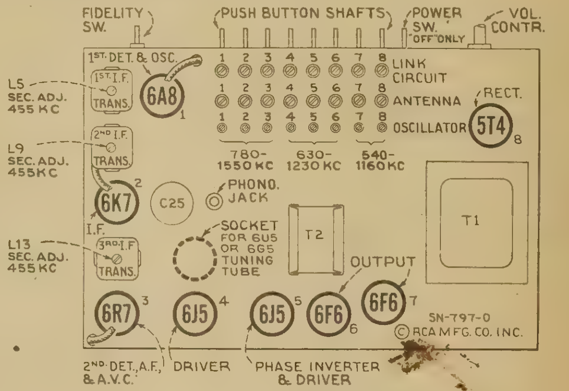


Figure 2—Radiotron and Trimmer Locations

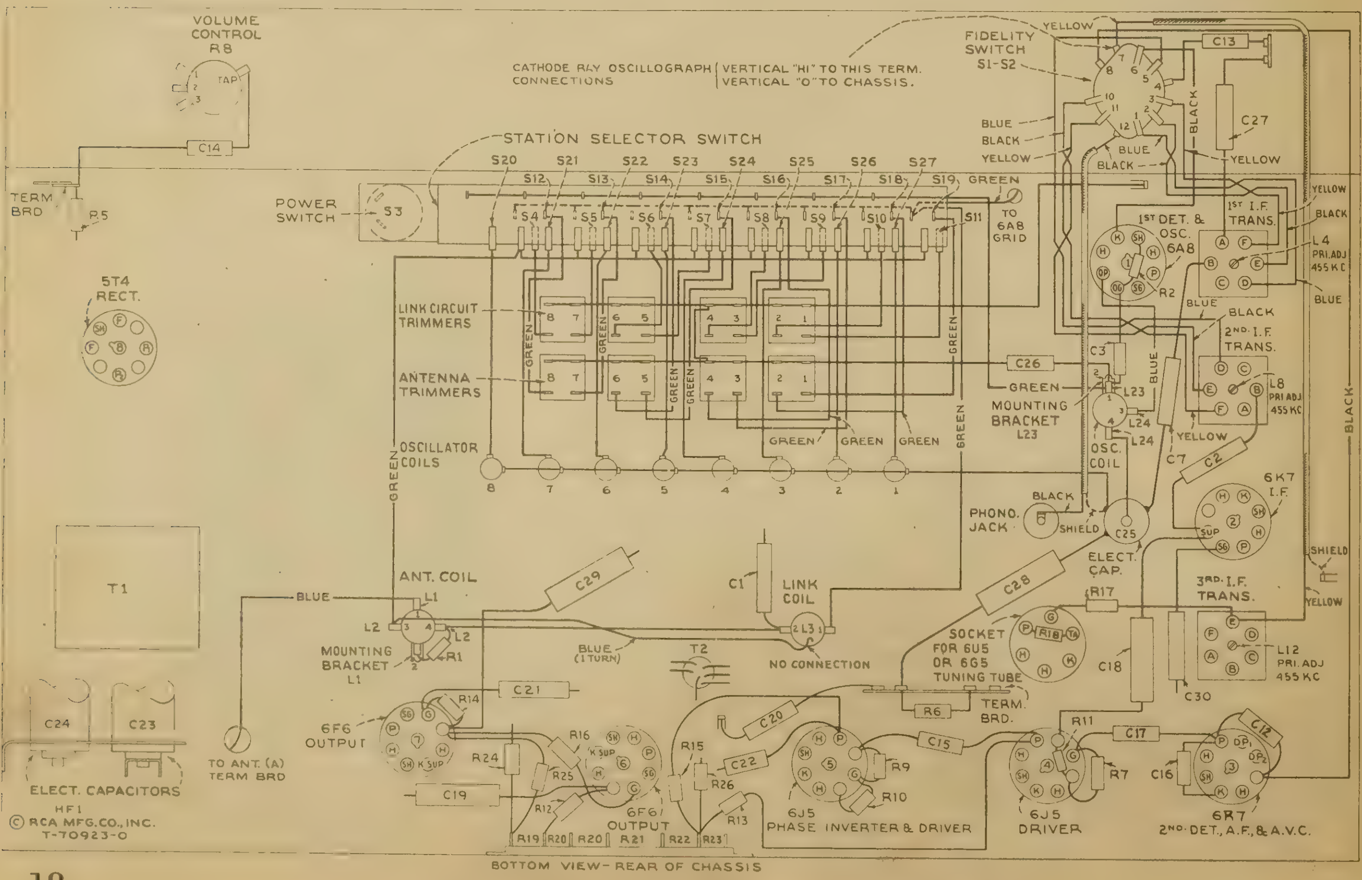


Figure 3—Component Parts Location and R-F Wiring Diagram

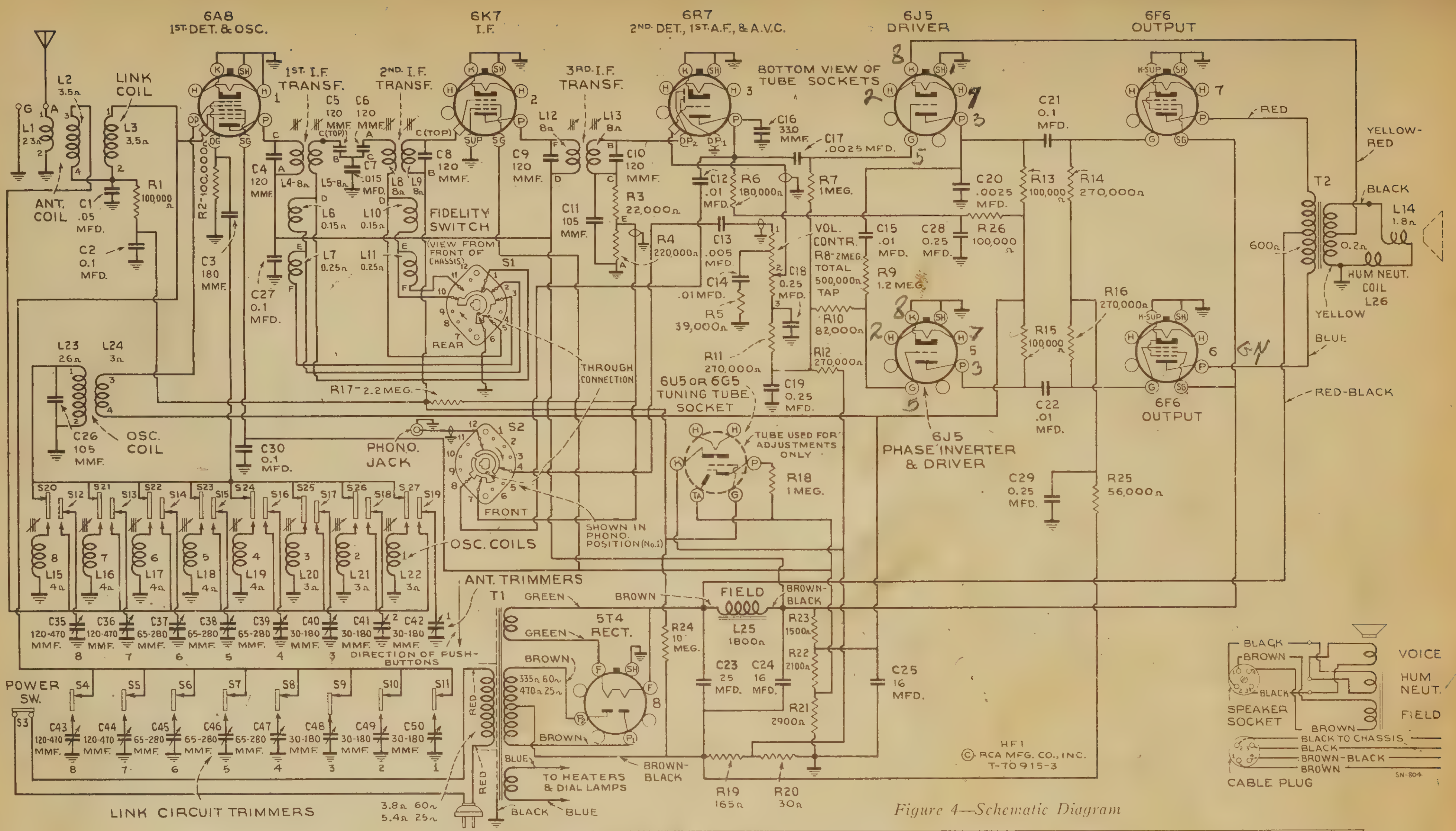


Figure 4—Schematic Diagram

Purpose and Function of the Six Positions on Fidelity Switch

No. 1	Phono operation, with minimum high-frequency response.	Connects phono to high side of volume control. Connects C12 (.01 mfd) from plate of 1st-a.f. tube to chassis. Disconnects radio by short-circuiting diode load R4.
No. 2	Phono operation, with maximum high-frequency response.	Same as position No. 1 except that C12 is disconnected.
No. 3	Radio operation, with maximum selectivity, minimum high-frequency response and minimum fidelity.	Short-circuits phonograph. Connects diode load to high side of volume control. Connects C12 (.01 mfd) from plate of 1st-a.f. tube to chassis. Grounds low end of L5 and L8.
No. 4	Radio operation, with maximum selectivity.	Same as position No. 3 except that C12 is disconnected, resulting in more highs than position 3.
No. 5	Radio operation, with medium selectivity and medium fidelity.	Same as position 4 except that ground is moved from L5 and L8 to low end of L6 and L10.
No. 6 (clockwise)	Radio operation, with minimum selectivity and full-range fidelity.	Same as position 5 except that ground is moved from L6 and L10 to low end of L7 and L11.

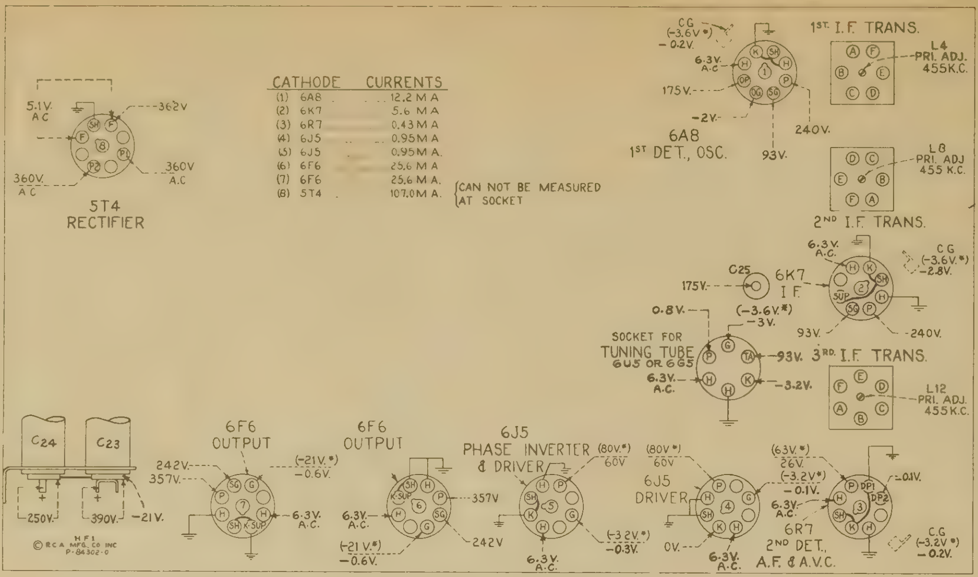


Figure 5—Radiotron Socket Voltages

* **Note:** Values with star (*) are operating voltages.
Values not starred are actual measured voltages.
Measurements made to chassis unless otherwise indicated and with Magic Eye in socket.
Measurements made with all push buttons out, volume control turned to minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt, 60-cycle supply.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
13216	Board—Antenna and ground terminal board	
30314	Cap—Grid contact cap	
12581	Cap—Shield cap for first or third I.F. transformers	
12607	Cap—Shield cap for second I.F. transformers	
30750	Capacitor—Adjustable dual trimmer 30-180 Mmfd. (C41, C42, C49, C50)	
31066	Capacitor—Adjustable dual trimmer 30-180 Mmfd. and 65-280 Mmfd. (C39, C40, C47, C48)	
30764	Capacitor—Adjustable dual trimmer 65-280 Mmfd. (C37, C38, C45, C46)	
30765	Capacitor—Adjustable dual trimmer 120-470 Mmfd. (C35, C36, C43, C44)	
30769	Capacitor—105 Mmfd. (C26)	
30904	Capacitor—105 Mmfd. (C11)	
12404	Capacitor—120 Mmfd. (C4, C5, C6, C8, C9, C10)	
13003	Capacitor—180 Mmfd. (C3)	
12952	Capacitor—330 Mmfd. (C16)	
5107	Capacitor—.0025 Mfd. (C17, C20)	
4838	Capacitor—.005 Mfd. (C13)	
14393	Capacitor—.01 Mfd. (C12, C14, C15, C22)	
11315	Capacitor—.015 Mfd. (C7)	
4886	Capacitor—.05 Mfd. (C1)	
4839	Capacitor—0.1 Mfd. (C2, C21, C27, C30)	
12484	Capacitor—0.25 Mfd. (C18, C19, C28, C29)	
30105	Capacitor—16 Mfd. (C25)	
5212	Capacitor—16 Mfd. (C24)	
14531	Capacitor—25 Mfd. (C23)	
31068	Coil—Link coil (L3)	
31069	Coil—Antenna coil (L1, L2)	
30749	Coil—Oscillator coil (L15, L16)	
30748	Coil—Oscillator coil (L17, L18, L19)	
30747	Coil—Oscillator coil (L20, L21, L22)	
31067	Coil—Oscillator coil (L23, L24)	
5040	Connector—4-contact female speaker connector	
30846	Core—Adjustable core and stud for oscillator coils	
12006	Core—Adjustable core and stud for I.F. transformers	
5226	Lamp—Pilot lamp	
30865	Resistor—Voltage divider comprising one 1,500 ohm, one 2,100 ohm, one 2,900 ohm, two 15 ohm, and one 165 ohm sections (R19, R20, R21, R22, R23)	
14284	Resistor—22,000 ohms, 1/10 watt (R3)	
12266	Resistor—39,000 ohms, ¼ watt (R5)	
12286	Resistor—56,000 ohms, ¼ watt (R25)	
12719	Resistor—82,000 ohms, 1/10 watt (R10)	
14560	Resistor—100,000 ohms, ¼ watt (R1, R2, R13, R15, R26)	
13698	Resistor—180,000 ohms, ¼ watt (R6)	
11398	Resistor—220,000 ohms, 1/10 watt (R4)	
12199	Resistor—270,000 ohms, ¼ watt (R11, R12, R14, R16)	
13730	Resistor—1 meg., ¼ watt (R18)	
12013	Resistor—1 meg., 1/10 watt (R7)	
31056	Resistor—1.2 meg., 1/10 watt (R9)	
12679	Resistor—2.2 meg., ¼ watt (R17)	
13601	Resistor—10 meg., ¼ watt (R24)	
12007	Spring—Retaining spring for core Stock Nos. 12006 and 30846	
12110	Shield—Radiotron shield cap	
14278	Socket—Phonograph socket	
14171	Socket—Pilot lamp socket	
4786	Socket—Adjustment eye socket	
11196	Socket—Radiotron socket (8-contact)	
31061	Switch—Selectivity and tone control switch (S1, S2)	
31070	Switch—Station selector and on-off switch—less push buttons (S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S25, S26, S27)	
31063	Transformer—First I.F. transformer (L4, L5, L6, L7, C5, C4)	
31064	Transformer—Second I.F. transformer (L8, L9, L10, L11, C6, C8)	
31065	Transformer—Third I.F. transformer (L12, L13, C9, C10, C11, R3, R4)	
31062	Transformer—Output transformer (T2)	
11211	Transformer—Power transformer 105-120 volts, 50-60 cycle (T1)	
11212	Transformer—Power transformer 105-120 volts, 25-60 cycle (T1)	
31060	Volume Control (R8)	
	REPRODUCER ASSEMBLIES (Speaker RL70E-4)	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L25)	
11469	Coil—Neutralizing coil (L26)	
12667	Cone—Reproducer cone, voice coil, center suspension, and dust cap (L14)	
5039	Plug—4-contact male plug for reproducer	
31072	Reproducer, complete	
14357	Washer—Spring washer to hold field coil securely	
	MISCELLANEOUS ASSEMBLIES	
31074	Button—Push button for on-off switch	
30981	Button—Push button for station selector switch	
13103	Cap—Pilot lamp cap	
31095	Discs—10 celluloid protector discs for call-letter markers	
31073	Escutcheon—Push button escutcheon	
14269	Knob—Volume control or selectivity and tone switch knob	
31028	Marker—Station call letter markers for push buttons	
31048	Plug—2-contact male plug for phono jack	
14270	Spring—Retaining spring for knob Stock No. 14269	

RCA Victor

MODELS HF-2, HF-4, U-130

Twelve-Tube, Five-Band, Electric-Tuning, A-C, Radios and Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 25—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"49 Meter" Band	5.92-6.23 mc
"31 Meter" Band	9.48-9.69 mc
"25 Meter" Band	11.68-11.94 mc
"19 Meter" Band	15.08-15.39 mc

R-F Alignment Frequencies

"A" Band	600 kc (osc.); 1,500 kc (osc., det., ant.)
"49 M"	6.0 mc (osc.)
"31 M"	9.60 mc (osc., det., ant.)
"25 M"	11.8 mc (osc.)
"19 M"	15.2 mc (osc.)

Intermediate Frequency.......... 455 kc

RCA Tube Complement

(1)	RCA-6K7	R-F Amplifier	(5)	RCA-6K7	2nd I-F Amp.	(9)	RCA-6F6	Power Output
(2)	RCA-6A8	First Detector	(6)	RCA-6R7	2nd Det., 1st A.F., A.V.C., Muting	(10)	RCA-6F6	Power Output
(3)	RCA-6J7	Heterodyne Oscillator	(7)	RCA-6J5	2nd A.F. Amp.	(11)	RCA-6U5	Tuning Indicator
(4)	RCA-6K7	1st I-F Amp.	(8)	RCA-6J5	Phase Inverter	(12)	RCA-5T4	Rectifier

Pilot Lamps: (4).......... 3—6.3 V., 0.25 Amp. Mazda No. 44; 1—6.3 V., 0.15 Amp. Mazda No. 47

Power Supply Ratings (Model U-130)

		Radio Only	Total
Rating A6	105-125 volts,	60 cycles, 125 watts	150 watts
Rating A	105-125 volts,	50-60 cycles, 125 watts	150 watts
Rating B2	105-125 volts,	25 cycles, 125 watts	150 watts
Rating C6	105-130/140-160/200-250 volts,	60 cycles, 125 watts	150 watts
Rating C	105-130/140-160/200-250 volts,	50-60 cycles, 125 watts	150 watts

Power Supply Ratings (Models HF-2 and HF-4)

Rating A	105-125 volts, 50-60 cycles, 125 watts
Rating B	105-125 volts, 25- cycles, 125 watts
Rating C	100-130/140-160/195-250 volts, 50-60 cycles, 125 watts

Power Output

Undistorted	10 watts
Maximum	12 watts

Loudspeaker

Type	12-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

Phonograph (Model U-130 only)

Type	Automatic
Record Capacity	Eight 10-inch, or Seven 12-inch
Turntable Speed	78 r.p.m. (Adjustable)
Type Pickup	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles

Mechanical Specifications

	Model HF-2	Model HF-4	Model U-130
Height (inches)	36	37	34
Width (inches)	35	36	36¼
Depth (inches)	15	14¾	17⅛
Weight (Net lbs.)	87	87	101
Weight (Shipping lbs.)	117	120	138

Chassis Dimensions (inches).......... 15⅝ x 8½ x 3⅛
Over-all Chassis Height (inches) (max.).......... 10-9/16

Operating Controls—Radio Panel.... (1) Power—Volume, (2) Fidelity Control, (3) Tuning Control, (4) Range Selector—Left to Right, "A," "49M," "31M," "25M," "19M," (5) Ten Push Buttons—Left to Right: Victrola Button, Eight Station Buttons, Dial Tuning Button.

Phono Board:
U-130 only—(1) Motor Switch, (2) Automatic 10, 12, or reject.

General Description

RCA Victor Models HF-2 and HF-4 employ a twelve-tube "Magic Brain" superheterodyne receiver chassis. Features of design include: "Electric Tuning" for eight broadcast stations; magnetite core, i-f transformers and oscillator coils; temperature stabilized capacitors; four short wave spread bands; automatic volume control; phase inverter audio amplifier, "Victrola" Attachment jack and switch; "Magic Eye" tuning tube; 12-inch, dust-proof improved electrodynamic speaker; aurally compensated volume control; continuously variable high-frequency tone control; provision for remote control armchair attachment; illuminated band indicator; noise reducing adjustment on "A" band; high fidelity switch (two positions); push-pull output and "Electrical Magic Voice."

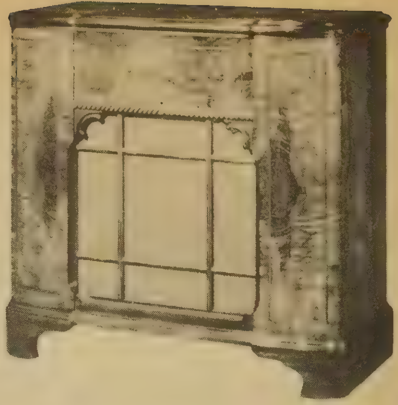
Model U-130 Victrola employs a similar radio chassis to the above models, and in addition an automatic turntable mechanism. The turntable has a self-starting motor, crystal pickup, and may be set to play 10-inch and 12-inch records singly or automatically. In the automatic position, seven 12-inch, or eight 10-inch records may be played in succession. The output of the pickup is automatically "shorted" out, when the pickup is on the pickup rest.

Trademarks "Magic Eye," "Magic Voice," "Magic Brain," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition

Model HF-2

Model HF-4



Model U-130

ADJUSTMENTS FOR ELECTRIC TUNING

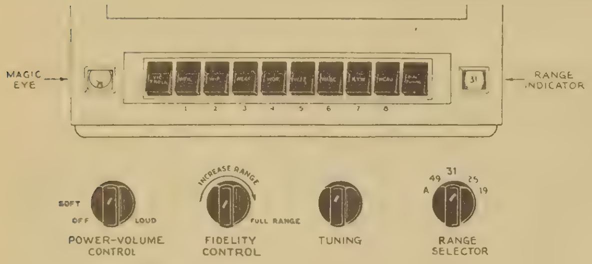


Figure 1—Location of Controls

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Turn Fidelity Control maximum counter-clockwise.
4. Press down the "dial-tuning" (right-hand) button.
5. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
6. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down, central dial lamp will light brightly or dully, depending on which side of disc, contact is. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.

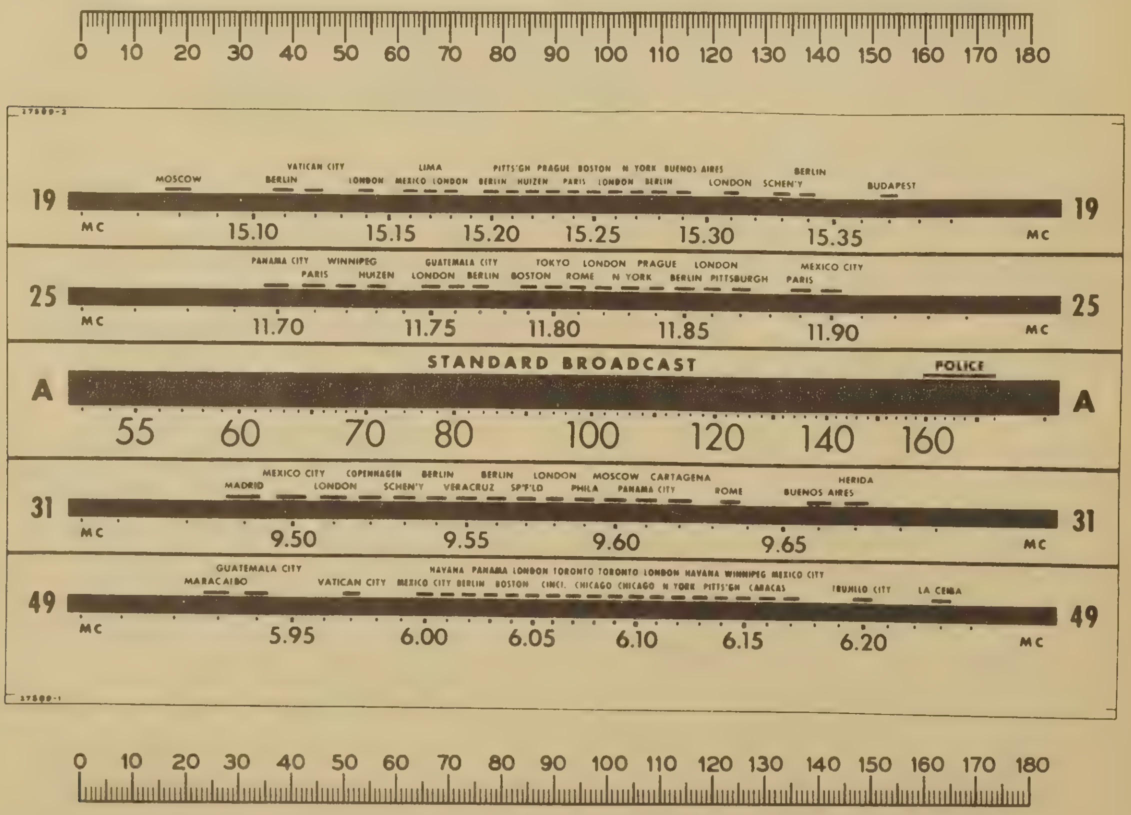


Figure 2—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example 90° on the calibration scale corresponds approximately to 11.8 mc on the 25-meter band, and 940 kc on "A" band, etc. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

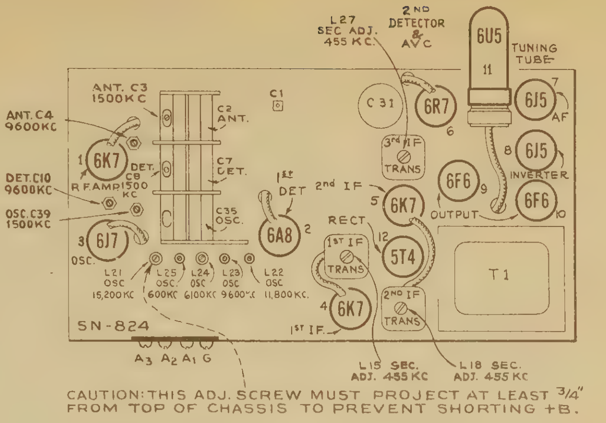


Figure 3—Tube and Trimmer Locations

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

Using RCA Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the Magic Eye may be used as an output indicator for this unmodulated signal.

Steps	Connect the high side of test-oscillator to—	Tune Test-Oscillator to—	Range Selector	Set Tuning Gang to—	Adjust the following for max. peak output
No. 1	Turn Fidelity Control to Maximum Counter-clockwise position.				
No. 2	6K7 2nd I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet Point between 550-750 kc	L26, L27 (3rd I-F transformer)
No. 3	6K7 1st I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet Point between 550-750 kc	L17, L18 (2nd I-F transformer)
No. 4	6A8 1st-det. grid cap in series with .01 mfd.	455 kc	"A"		L14, L15 (1st I-F transformer)
No. 5	A2, in series with 100 mmf. A3 to Chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.) C3 (ant.) C8 (det.)
No. 6	A2, in series with 100 mmf. A3 to Chassis.	600 kc	"A"	600 kc (30.0°)	L25 (osc.)
No. 7	A2, in series with 100 mmf. A3 to Chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.)
No. 8	A2. Connect A1 to chassis.	6,100 kc	"49M"	6,100 kc (106°)	L24 (osc.)*
No. 9	A2. Connect A1 to chassis.	9,600 kc	"31M"	9,600 kc (102°)	L23 (osc.)** C4 (ant.) C10 (det.)
No. 10	A2. Connect A1 to chassis.	11,800 kc	"25M"	11,800 kc (90.0°)	L22 (osc.)**
No. 11	A2. Connect A1 to chassis.	15,200 kc	"19M"	15,200 kc (78.0°)	L21 (osc.)**

*** Use maximum inductance peak (plunger in) if two peaks can be obtained.**

**** Use minimum inductance peak (plunger out) if two peaks can be obtained.**

Note that oscillator tracks **above** signal frequency on all bands except "49M," where it tracks **below.**

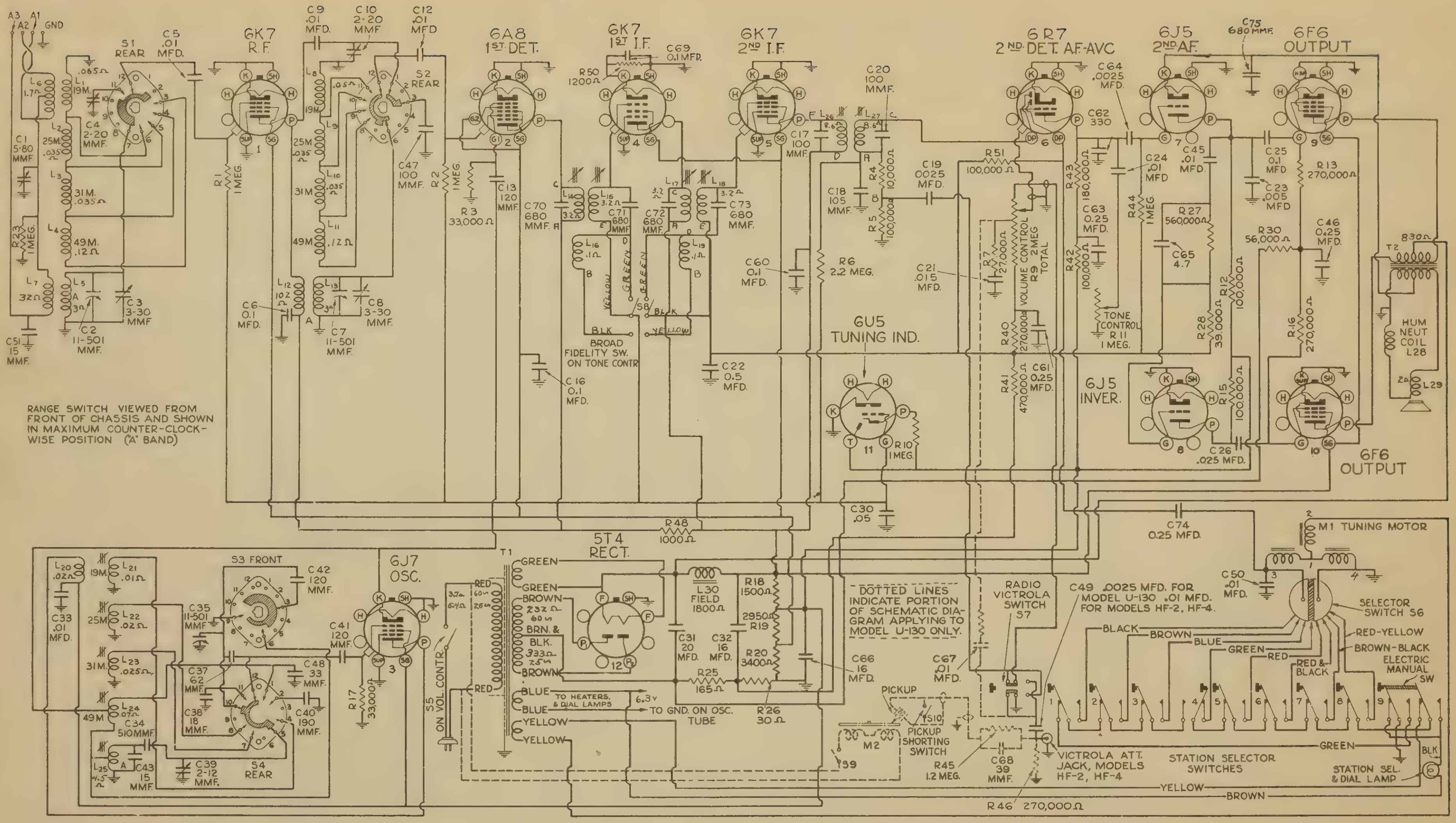


Figure 4—Schematic Circuit Diagram

Precautionary Lead Dress.—

(2) Leads on spread-band antenna and r-f coils and trimming capacitors should be kept short as possible.

(3) Keep black lead from L25 away from C38 and L24.

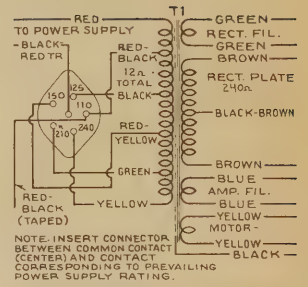
(4) Keep black lead from L25 to cathode lug on 6J7 away from R17.

(5) The power cord lead and the primary lead of the power transformer which connect to the power switch should be twisted together, and kept away from Volume Control.

(6) Keep C13 away from the 6A8 control grid lead and from the chassis.

(7) Shielded leads to Victrola jack must be dressed away from switch terminals and jack.

(8) Blue and black leads from antenna board to coils must be twisted.



UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

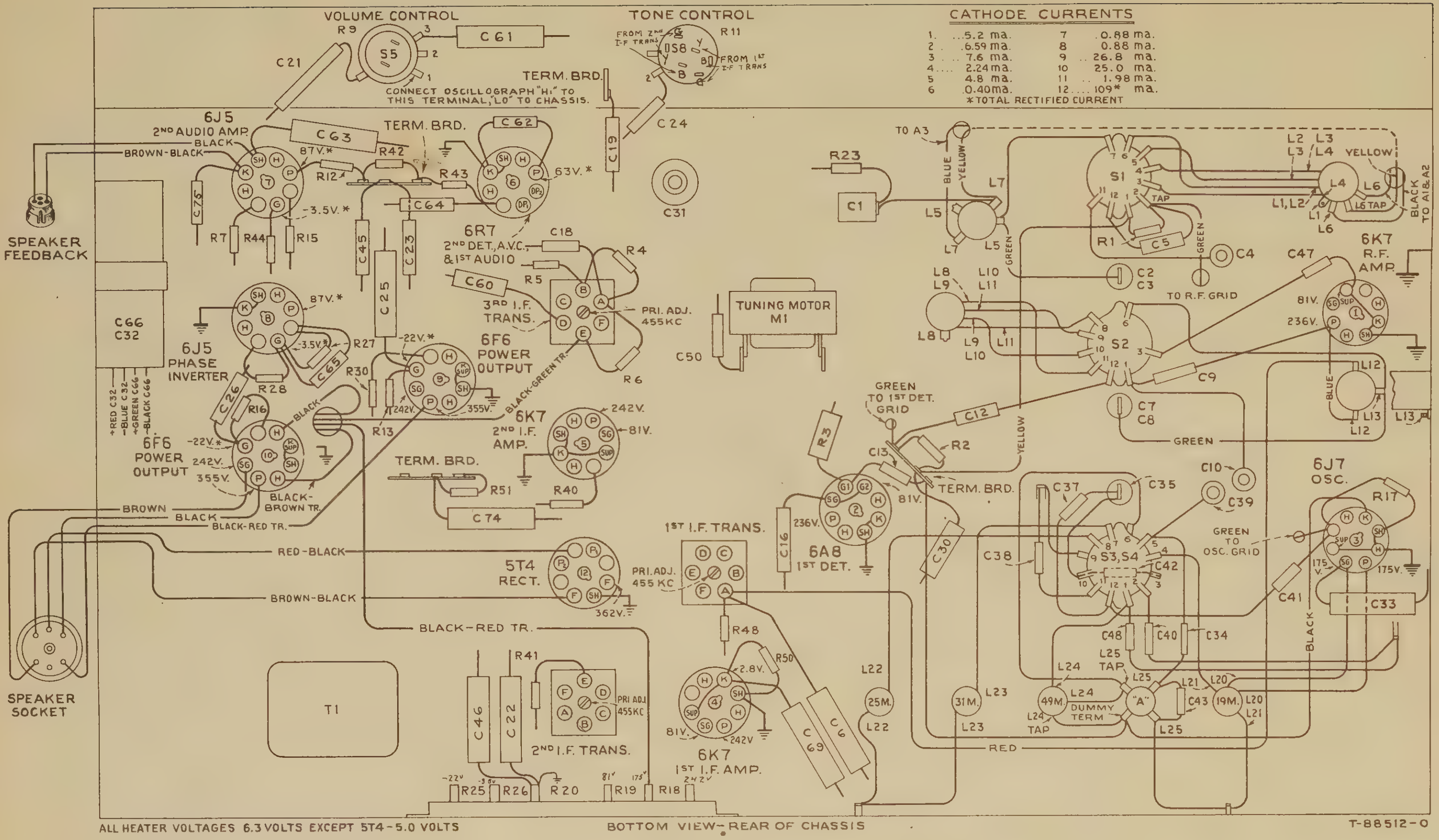
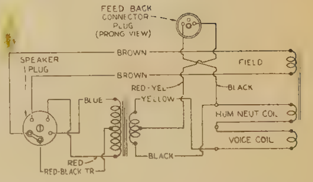


Figure 5—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Above — Connections and Colors of Loudspeaker Wiring.

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the I-F first-audio and second-audio tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

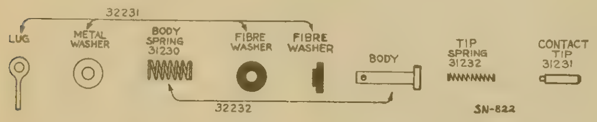


Figure 6—(Above) Component Parts of Station-Setting Contact

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal horizontal position.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver as shown in figure 7 it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. In some cases one of the other seven station buttons on the set may be used in place of No. 1 button for the operation of the Armchair Control.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Model G8A Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged simultaneously causing the motor to be inoperative and overheated.

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow

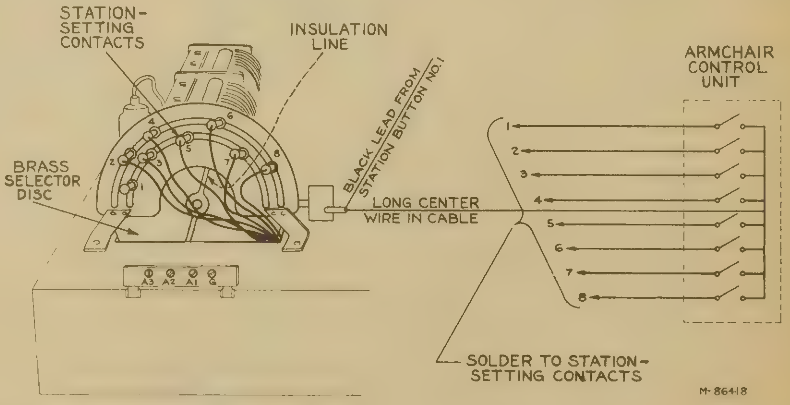


Figure 7—Station-Setting Contacts and Selector Disc

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

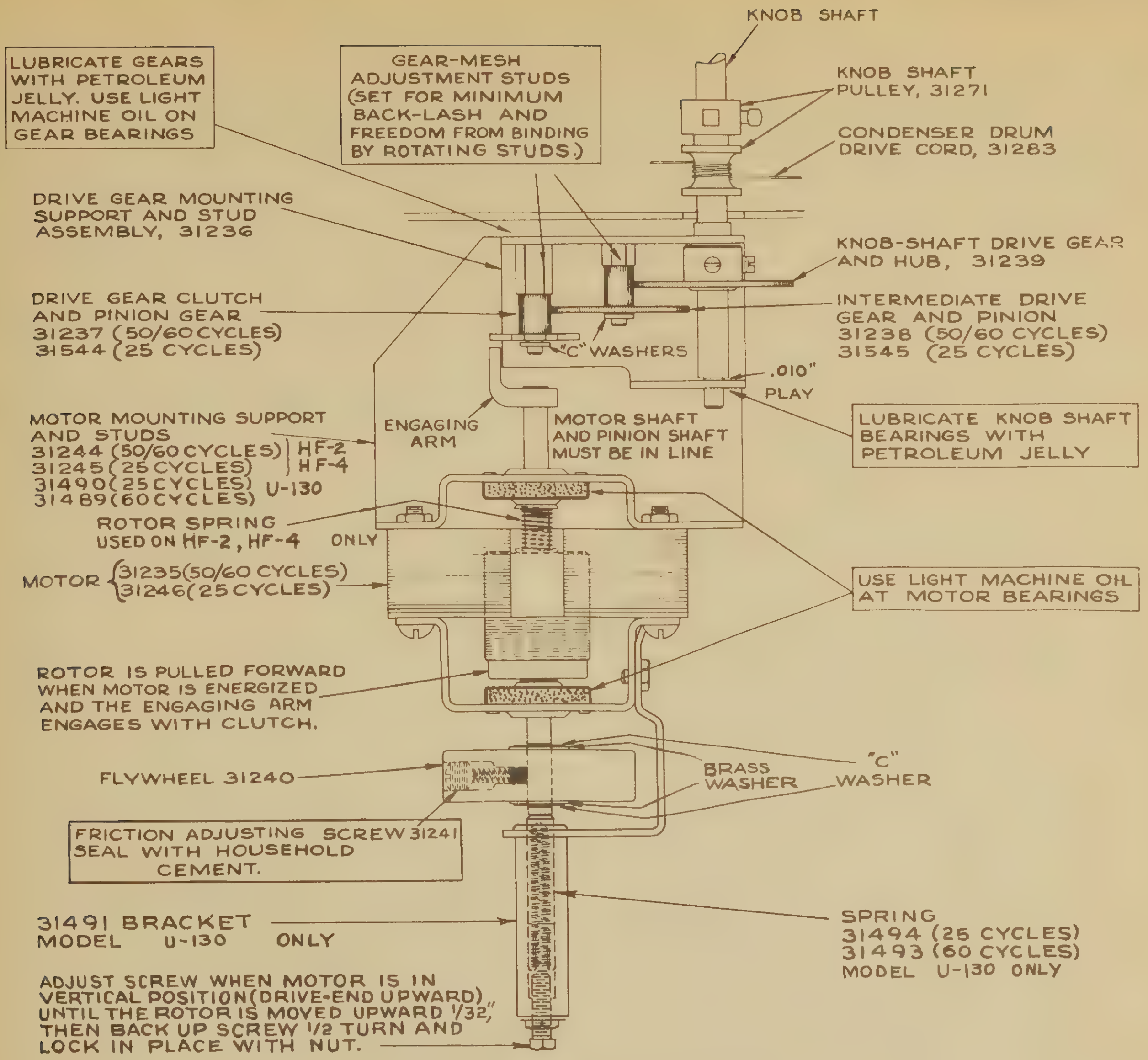
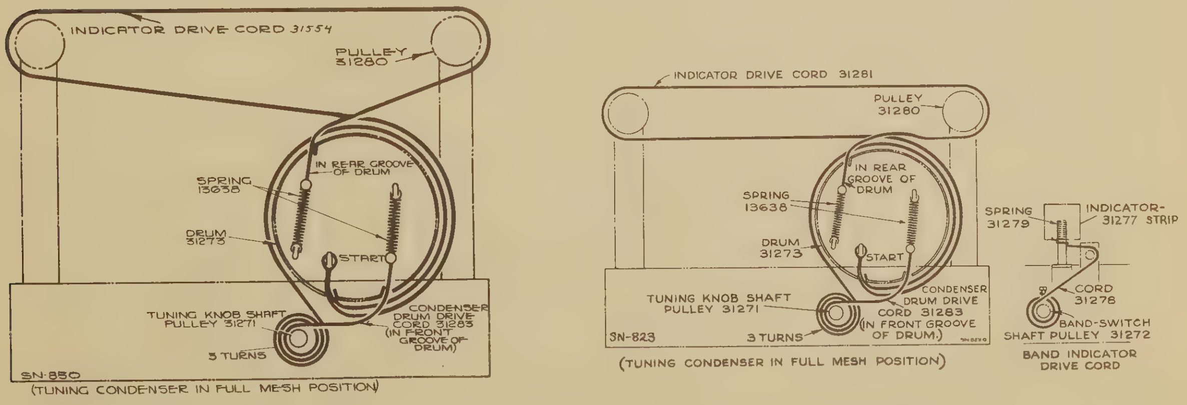

KNOB SHAFT
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
.010" PLAY
MOTOR MOUNTING SUPPORT AND STUDS
31244 (50/60 CYCLES) HF-2
31245 (25 CYCLES) HF-4
31490 (25 CYCLES) U-130
31489 (60 CYCLES)
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING USED ON HF-2, HF-4 ONLY
MOTOR {31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
31491 BRACKET MODEL U-130 ONLY
SPRING 31494 (25 CYCLES) 31493 (60 CYCLES) MODEL U-130 ONLY
ADJUST SCREW WHEN MOTOR IS IN VERTICAL POSITION (DRIVE-END UPWARD) UNTIL THE ROTOR IS MOVED UPWARD 1/32," THEN BACK UP SCREW 1/2 TURN AND LOCK IN PLACE WITH NUT.

Figure 8—Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.


INDICATOR DRIVE CORD 31554
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM)
3 TURNS
SN-850
(TUNING CONDENSER IN FULL MESH POSITION)
INDICATOR DRIVE CORD 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
3 TURNS
SN-823
(TUNING CONDENSER IN FULL MESH POSITION)
SPRING 31279
INDICATOR-31277 STRIP
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD

Models HF-4, U-130

Model HF-2

Figure 9—Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch

Miscellaneous Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

NOTE: Due to inverse feedback used on these models, it is very important to connect speaker, speaker cable, and feedback cable, exactly as shown.

Victrola Attachment. — A jack located near the "Magic Eye" tube is provided for connecting a Victrola Attachment into the audio-amplifying circuit. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C1 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C1 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31492	Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly—Model U-130 only	
31253	Board—Antenna and ground terminal board—Models HF-2 and HF-4	
31531	Board—Antenna and ground terminal board—Model U-130 only	
31276	Bracket—Band indicator mounting bracket complete except less band indicating strip, cord, and tension spring	
31282	Bracket—Magic Eye bracket and holder	
31491	Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment — Model U-130 only	
30766	Cap—Magic Eye rubber cap	
12884	Capacitor—Trimmer capacitor 2-20 mmfd. (C4, C10)	
12714	Capacitor—Trimmer capacitor 2-12 mmfd. (C39)	
14392	Capacitor—4.7 mmfd. (C65)	
31252	Capacitor—Adjustable trimmer 5-80 mmfd. (C1)	
12896	Capacitor—15 mmfd. (C51)	
31353	Capacitor—15 mmfd. (C43)	
31350	Capacitor—18 mmfd. (C38)	
31354	Capacitor—33 mmfd. (C48)	
13545	Capacitor—39 mmfd. (C68)—Model U-130 only	
31349	Capacitor—62 mmfd. (C37)	
12720	Capacitor—100 mmfd. (C18, C47)	
31270	Capacitor—100 mmfd. (C17, C20)	
12724	Capacitor—120 mmfd. (C13, C41, C42)	
31351	Capacitor—190 mmfd. (C40)	
12952	Capacitor—330 mmfd. (C62)	
31348	Capacitor—510 mmfd. (C34)	
31552	Capacitor—680 mmfd. (C70, C71, C72, C73)	
14498	Capacitor—680 mmf. (C75)	
5107	Capacitor—.0025 mfd. (C19, C49, C64) (C49—Model U-130 only)	
4838	Capacitor—.005 mfd. (C23)	
4858	Capacitor—.01 mfd. (C9, C45)	
14393	Capacitor—.01 mfd. (C5, C12, C24, C33, C49, C50, C67) (C49—Models HF-2 and HF-4 only) (C67—Model U-130 only)	
11315	Capacitor—.015 mfd. (C21)	
4870	Capacitor—.025 mfd. (C26)	
30882	Capacitor—.05 mfd. (C30)	
4839	Capacitor—0.1 mfd. (C6, C16, C25, C60, C69)	
30965	Capacitor—0.25 mfd. (C74)	
12484	Capacitor—0.25 mfd. (C46, C61, C63)	
30867	Capacitor—0.5 mfd. (C22)	
31553	Capacitor—Comprising 2 sections each 16 mfd. (C32, C66)	
31495	Capacitor—20 mfd. (C31)	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only	

STOCK No.	DESCRIPTION	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—50-60 cycle models only	
31263	Coil—"A" band antenna coil (L5, L7)	
31264	Coil—19, 25, 31, and 49 meter bands antenna coil (L1, L2, L3, L4, L6)	
31257	Coil—"A" band oscillator coil (L25)	
31258	Coil—19 meter band oscillator coil (L20, L21)	
31265	Coil—"A" band r-f coil (L12, L13)	
31266	Coil—19, 25, 31, and 49 meter bands r-f coil (L8, L9, L10, L11)	
31254	Coil—25 meter band oscillator coil (L22)	
31255	Coil—31 meter band oscillator coil (L23)	
31256	Coil—49 meter band oscillator coil (L24)	
31234	Condenser—3-gang variable condenser (C2, C3, C7, C8, C35)	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip	
31231	Contact—Contact tip for station selector plunger	
31278	Cord—Band indicator drive cord	
31281	Cord—Indicator pointer drive cord—Model HF-2 only	
31554	Cord—Indicator pointer drive cord—Models HF-4 and U-130 only	
31283	Cord—Variable condenser drum drive cord	
31260	Core—Adjustable core and stud for "A" band oscillator coil	
31269	Core—Adjustable core for i-f transformers	
31259	Core—Adjustable core and stud for 19, 25, 31, or 49 meter band oscillator coils	
31273	Drum—Indicator drive cord drum	
31240	Flywheel—Variable condenser drive motor flywheel	
31239	Gear—Variable condenser knob shaft drive gear and hub	
31545	Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only	
31238	Gear—Variable condenser intermediate drive gear and pinion gear—50-60 cycle models only	
31277	Indicator—Band indicator strip—Models HF-2 and HF-4	
31555	Indicator—Band indicator strip—Model U-130	
11891	Lamp—Dial lamp	
31480	Lamp—Tuning indicator pilot lamp	
31243	Leather—Friction leather insert for flywheel	
31346	Lock-plate—Push button switch lock-plate—comprising 10 contact locks in one strip	
31246	Motor—Variable condenser drive motor for 25 cycle models (M1)	
31235	Motor—Variable condenser drive motor for 50-60 cycle models (M1)	
31228	Plate—Station selector contact—less plungers	
31227	Plate—Station selector mounting — mounts on rear of variable condenser	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
30868	Plug—2-contact female plug for motor power cable—Model U-130 only	
31572	Plug—3-contact female plug for speaker cable	
12493	Plug—5-contact female plug for speaker cable	
31280	Pulley—Indicator pointer drive cord pulley	
31271	Pulley—Motor drive pulley—fastens on motor drive knob shaft	
31272	Pulley—Range switch pulley	
31548	Resistor—Voltage divider comprising one 1,500 ohms, one 2,950 ohms, one 3,400 ohms, one 80 ohms, and one 165 ohms, sections (R18, R19, R20, R25, R26)	
14720	Resistor—1,000 ohms, ¼ watt (R48)	
12267	Resistor—1,200 ohms, ¼ watt (R50)	
14559	Resistor—10,000 ohms, ¼ watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R3, R17)	
31573	Resistor—39,000 ohms, 1/10 watt (R28)	
12286	Resistor—56,000 ohms, ¼ watt (R30)	
14560	Resistor—100,000 ohms, ¼ watt (R5, R12, R15, R42, R51)	
13698	Resistor—180,000 ohms, ¼ watt (R43)	
12199	Resistor—270,000 ohms, ¼ watt (R13, R16, R40, R46) (R46—Model U-130 only)	
12285	Resistor—470,000 ohms, ¼ watt (R41)	
11397	Resistor—560,000 ohms, 1/10 watt (R27)	
12013	Resistor—1 meg., 1/10 watt (R10)	
13730	Resistor—1 meg., ¼ watt (R1, R2, R23, R44, R47) (R47—Model U-130 only)	
30208	Resistor—1.2 meg., ¼ watt (R45)—Model U-130 only	
12679	Resistor—2.2 meg., ¼ watt (R6)	
14887	Retainer—Indicator pointer drive cord pulley retainer	
31233	Disc—Station selector rotor disc — mounts on rear of variable condenser shaft	
31241	Screw—¼-20 headless, cone pointer set screw for flywheel	
4119	Screw—No. 8-32 headless set screw for gear Stock No. 31239	
4669	Screw—No. 8-32 x ⅜ set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273	
14350	Screw—No. 8-32 square head set screw for station selector rotor disc	
31364	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket	
31347	Socket—Pickup input socket and bracket	
31251	Socket—Radiotron socket	
31365	Socket—Tuning indicator lamp insulated socket	
31242	Spring—Friction leather tension spring for flywheel	
13638	Spring—Indicator pointer drive cord, and variable condenser drum drive cord tension spring	
31232	Spring—Contact tip spring for station selector plunger	
12007	Spring—Retaining spring for adjustable core	
31230	Spring—Station selector plunger body spring	
31279	Spring—Tension spring for band indicator	
31970	Spring—Tension spring for push button switch latch bar	
31494	Spring—Variable condenser motor rotor adjustment bearing spring for 25 cycle models—Model U-130	
31493	Spring—Variable condenser motor rotor adjustment bearing spring for 50-60 cycle models —Model U-130	
31236	Support—Variable condenser drive gear mounting support and studs assembly	
31490	Support—Variable condenser motor mounting support and studs—25 cycle models only—Model U-130 only	
31245	Support—Variable condenser motor mounting support and studs—25 cycle models only—Models HF-2 and HF-4 only	
31489	Support—Variable condenser motor mounting support and studs—50-60 cycle models only —Model U-130	
31244	Support—Variable condenser motor mounting support and studs—50-60 cycle models only —Models HF-2 and HF-4 only	
31360	Switch—Pickup switch for mounting on push button switch (S7)	
31312	Switch—Push button switch and bracket assembly	
31247	Switch—Range switch (S1, S2, S3, S4)	
31546	Tone Control and fidelity switch (R11, S8)	
31565	Transformer—First i-f transformer (L14, L15, C70, C71, L16)	
31551	Transformer—Second i-f transformer (L17, L18, L19, C72, C73)	
31549	Transformer—Third i-f transformer (L26, L27, C17, C20)	
31226	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1)	

STOCK No.	DESCRIPTION	
31225	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1)	
31308	Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)	
31547	Volume Control and power switch (R9, S5)	
	MOTORBOARD ASSEMBLIES Model U-130	
31149	Base—Tone arm mounting base	
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	
14209	Bumper—Main lever rubber bumper (1)	
9848	Cup—Used needle cup, rest, and lid complete	
31148	Escutcheon—Index escutcheon	
31151	Guide—Pickup lift cable guide (Coil spring, 80T 2-in. large) (2)	
31150	Mounting—Pickup arm base rubber mounting complete	
31155	Spring—Needle cup lid tension spring	
	OPERATING MECHANISM Model U-130	
31134	Bracket—Pickup locating lever mounting bracket (3)	
31144	Cam—Cam and gear assembly (4)	
6808	Clutch—Trip lever friction clutch assembly (5)	
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	
31129	Cover—Cap for top of record post	
31116	Finger—Trip lever friction finger assembly (7)	
31119	Gear—Long arm and rack gear for front left-hand record post (8)	
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	
31121	Gear—Record post gear (10)	
31123	Guide—Main lever spring guide (11)	
31114	Lever—Index lever assembly (12)	
31137	Lever—Index lever tension spring lever (13)	
31138	Lever—Locating lever and pawl assembly (14)	
31113	Lever—Main lever assembly (15)	
31140	Lever—Pickup lift cable lever and spring assembly (16)	
31135	Lever—Pickup locating lever assembly (17)	
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	
31132	Lever—Trip detaining lever (19)	
31115	Lever—Trip lever assembly (20)	
31131	Lever—Trip regulator lever (21)	
31133	Pawl—Trip pawl assembly (22)	
31124	Pin—Record post drive pin (23)	
14207	Roller—Pickup lift cable roller and bracket assembly (24)	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	
31136	Spring— index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅝-in. O.D., ¾-in. lg.)	
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set of rubber strips for flexible coupling	
31139	Turntable Assembly—less spindle	
31128	Washers—"C" washer for top of record post	
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	
	MOTOR ASSEMBLIES Model U-130	
31448	Motor—105-125 volts, 25 cycle (M2)	
31163	Motor—105-125 volts, 50-60 cycle (M2)	
31157	Motor—105-125 volts, 60 cycle (M2)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
30870	Plug—2-contact male plug for motor power cable	
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	
14206	Switch—Motor toggle switch (S7)	
	PICKUP AND ARM ASSEMBLIES **Model U-130**	
31162	Cable—Pickup arm lift cable and clips	
31156	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	
	SPEAKER ASSEMBLIES **(Speaker RL70F-5)**	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L30)	
11469	Coil—Hum neutralizing coil (L28)	
31275	Cone—Speaker cone and voice coil (L29)	
31567	Plug—3-contact male plug for speaker	
31539	Plug—5-contact male plug for speaker	
31556	Speaker complete	
31557	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	
	MISCELLANEOUS ASSEMBLIES	
31358	Button—Station selector push button	
13103	Cap—Pilot lamp cap—Model U-130 only	
31286	Carriage—Indicator pointer slide carriage—Model HF-2 only	
31456	Cover—8-protective covers for push button markers	
31540	Cushion—Chassis mounting cushion and screw assemblies sufficient for one chassis—Model U-130 only	
31541	Cushion—Motor plate mounting cushion and clamp assembly, sufficient for one instrument—Model U-130 only	
31562	Dial—Station selector dial scale and crystal—Models HF-4 and U-130 only	
31363	Dial—Station dial scale and crystal—Model HF-2 only	
31561	Escutcheon—Dial escutcheon less dial scale, and push buttons—Models HF-4 and U-130 only	
31362	Escutcheon—Dial escutcheon less dial scale, and push buttons—Model HF-2 only	
30698	Hinge—Cabinet lid hinge—Model U-130 only	
4585	Hinge—Door hinges (1 top and 1 bottom) sufficient for one door—Model HF-4 only	
31564	Holder—Needle card holder—Model U-130	
31560	Indicator—Station selector indicator pointer and carriage assembly—Models HF-4 and U-130	
31284	Indicator—Station selector indicator pointer—less carriage—Model HF-2 only	
31355	Knob—Station selector, volume control, tone control, or range switch knob	
31458	Marker—"Dial Tuning" push button marker	
31457	Marker—"Record Player" push button marker	
31589	Marker—Station call letter push button markers	
31566	Pull—Door pull—Model HF-4 only	
31287	Rod—Indicator pointer slide rod	
31285	Screen—Dial color screen—Model HF-2 only	
31559	Screen—Dial color screen—Models HF-4 and U-130 only	
4560	Screw—Chassis mounting screw, washer, and lockwasher (4 required)—Models HF-2 and HF-4 only	
31558	Spring—Indicator pointer slide stop spring	
14270	Spring—Retaining spring for knob Stock No. 31355	
31478	Support—Cabinet lid support—Model U-130 only	
31470	Suspension—Motor board suspension springs, screw, and lockwasher (4 required)—Model U-130 only	
	ANTENNA ASSEMBLIES	
31426	Counterpoise Line—Additional length 60 ft. long	
12426	Insulator—Strain and counterpoise insulator	
9816	Transmission Line—Additional length 60 ft. long	

RCA Victor

MODELS HF-6, HF-8, U-132, U-134

Fourteen- and Sixteen-Tube, Seven-Band, Electric-Tuning, A-C, Radios and Victrolas

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 28—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,000 kc
"Short Wave" (C)	7,000-22,000 kc
"49 Meter" Band	5,920-6,230 kc
"31 Meter" Band	9,480-9,700 kc
"25 Meter" Band	11,680-11,940 kc
"19 Meter" Band	15,080-15,390 kc

R-F Alignment Frequencies

"A" Band	600 kc (osc.); 1,500 kc (osc., ant., det.)
"B" Band	2,400 kc (osc.); 6,100 kc (osc., ant.)
"C" Band	9,600 kc (osc.); 20,000 kc (osc., ant.)
31 M	9,600 kc (osc., ant., det.)
49M	6,100 kc (osc.)
25M	11,800 kc (osc.)
19M	15,200 kc (osc.)

Intermediate Frequency	455 kc

RCA Tube Complement (Models HF-8, U-134)

(1)	6K7	R-F Amplifier
(2)	6L7	First Detector
(3)	6J7	Oscillator
(4)	6J7	Oscillator Control
(5)	6K7	First I.F.
(6)	6K7	Second I.F.
(7)	6H6	Second Detector and Muting
(8)	6H6	Discriminator and AVC
(9)	6U5	Tuning Tube
(10)	6J5	First Audio
(11)	6J5	Second Audio
(12)	6J5	Inverter
(13)	6L6	Power Output
(14)	6L6	Power Output
(15)	5T4	Rectifier
(16)	5T4	Rectifier

(Models HF-6, U-132)

(1)	6K7	R-F Amplifier
(2)	6L7	First Detector
(3)	6J7	Oscillator
(4)	6J7	Oscillator Control
(5)	6K7	First I.F.
(6)	6K7	Second I.F.
(7)	6R7	Second Detector, Muting, First A.F.
(8)	6H6	Discriminator and AVC
(9)	6U5	Tuning Tube
(10)	6J5	Second Audio
(11)	6J5	Inverter
(12)	6F6	Output
(13)	6F6	Output
(14)	5T4	Rectifier

Pilot Lamps (3) .... Radio: (2) 6.3 volts, 0.25 ampere Mazda No. 44; (1) 6.3 volts, 0.15 ampere Mazda No. 47
Phono: (1) 6.3 volts, 0.25 ampere Mazda No. 44

Power Supply Ratings

	Model HF-6	Model HF-8
Rating A—105-125 volts, 50-60 cycles	135 watts	180 watts
Rating B—105-125 volts, 25 cycles	135 watts	180 watts
Rating C—100-130/140-160/195-250 volts, 50-60 cycles	135 watts	180 watts

	Model U-132		Model U-134	
	Radio Only	Total	Radio Only	Total
Rating A —105-125 volts, 50-60 cycles	135 watts	160 watts	180 watts	205 watts
Rating A6—105-125 volts, 60 cycles	135 watts	160 watts	180 watts	205 watts
Rating B2—105-125 volts, 25 cycles	135 watts	160 watts	180 watts	205 watts
Rating C —105-130/140-160/200-250 volts, 50-60 cycles	135 watts	160 watts	180 watts	205 watts
Rating C6—105-130/140-160/200-250 volts, 60 cycles	135 watts	160 watts	180 watts	205 watts

Power Output (Models HF-8, U-134)

Undistorted	20 watts
Maximum	24 watts

(Models HF-6, U-132)

Undistorted	10 watts
Maximum	12 watts

Loudspeaker

Type	12-inch Electrodynamic (Triple Cone)
Voice Coil Impedance	11.3 ohms at 400 cycles

Mechanical Specifications

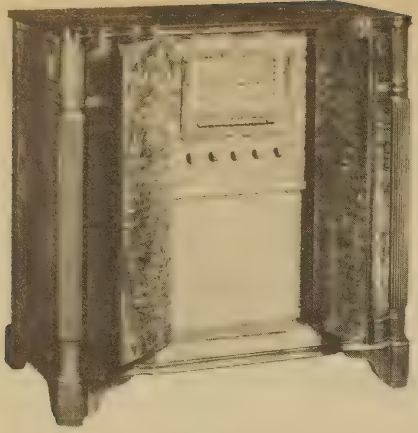
Phonograph (Models U-132, U-134 Only)

Type	Automatic
Record Capacity	Eight 10-inch or seven 12-inch
Turntable Speed	78 r.p.m. (adjustable)
Type Pickup	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles

	Model HF-6	Model HF-8	Model U-132	Model U-134
Height (inches)	36	37	35¼	37
Width (inches)	36¾	36¼	37	39
Depth (inches)	17⅞	19⅜	$18\frac{9}{16}$	19
Weight (Net lbs.)	105	149	141	162
Weight (Shipping lbs.)	129	176	184	210

Chassis dimensions (inches)	4 x $12\frac{5}{16}$ x $22\frac{3}{16}$
Maximum chassis height (inches)	11⅜
Tuning drive ratio	18 to 1

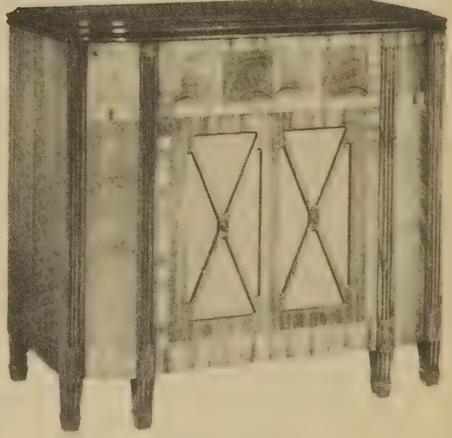
Trademark "Magic Voice," "Magic Eye," "Victrola," "Magic Brain"
Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.



Model HF-8

Model HF-6

Model U-134



Model U-132

General Description

Model HF-8 is a sixteen-tube "Magic Brain" superheterodyne receiver mounted in a handsomely styled Eighteenth Century type cabinet. The cabinet may be made of either of two kinds of woods, walnut veneer or mahogany. Features of design include: "Electric Tuning" for eight broadcast stations; Victrola attachment jack and push-button switch; magnetite-core tuned, i-f and oscillator coils; temperature stabilized capacitors: four short-wave broadcast spread bands; complete short-wave coverage with two complete short-wave bands; automatic volume control; aurally compensated volume control; "local," "distance," seven point high-fidelity and high frequency tone, control; low frequency tone control; 12 inch, triple-cone, high fidelity speaker; remote control armchair attachment; automatic frequency control with "Electric Tuning" and manual tuning; illuminated band indicator; noise reducing adjustment on "A" band; wave trap; "Magic Eye" tuning tube; 10 kc whistle filter; audio phase inverter; push-pull beam power output; and "Electrical Magic Voice."

Model HF-6 is a fourteen-tube "Magic Brain" superheterodyne receiver, mounted in a "Console Grand" cabinet of handsomely matched walnut veneers. Features of design are the same as the Model HF-8, except beam power output is replaced by push-pull pentode output; and two less tubes are used.

Model U-134 RCA Victrola is a combination radio receiver and phonograph mechanism mounted in an Eighteenth Century styled cabinet made of either superbly matched walnut veneers, or fine grain mahogany. The radio receiver is identical with that of the Model HF-8. The phonograph turntable is of a new design, and may be played manually or automatically. In manual operation, one 10-inch or one 12-inch record may be played at a time. In the automatic position, eight 10-inch, or seven 12-inch records may be played in succession. The pickup is automatically "shorted out," when placed on the pickup rest.

Model U-132 RCA Victrola is a combination radio receiver and phonograph mechanism mounted in a handsome, matched Eighteenth Century styled cabinet of walnut veneer. The radio receiver is the same as that of Model HF-6, and the turntable mechanism is the same as in Model U-134.

With the unusual characteristics of the instruments described above, naturally, as with other high quality, high fidelity instruments, proper operation is important for maximum satisfaction. The proper use of the Fidelity and tuning controls insures the ultimate in radio entertainment. The Fidelity control has seven positions, the purpose of which is fully explained in the table. In the full range position the reproduction is faithful from 40 to 7,500 cycles. A special filter is employed in the plate circuit of the first audio amplifier to reduce 10 kc whistle.

In the majority of cases, the high fidelity positions of the control, positions 5, 6, and 7, may be used on local stations to give true response of the broadcast program. However, on distant broadcast, or short wave stations, the receiver should be operated with the Fidelity control in 1, 3, or 4 position to eliminate cross talk, monkey chatter, and any other adjacent-channel interference.

The tuning control has a special function used in conjunction with the Fidelity control. When the tuning knob is pushed in, and the Fidelity control is in position No. 2, the i-f response of the receiver will return to its maximum selectivity position. Releasing the tuning knob will broaden the i-f channel as shown in the table. When the Fidelity control is in position No. 3 or 4, and Tuning control is pushed in, the AFC system will be rendered inoperative. With Fidelity control in No. 5, 6, or 7 position, pushing in Tuning control returns i-f channel to a sharp selectivity position, and renders AFC system inoperative. This function of the tuning control should be used when tuning in local, or medium-distant stations, manually. For distant stations, Fidelity control should be in No. 1 or No. 2 positions.

On Models U-132, U-134, the Fidelity control is also operative while records are being played—thus giving full Fidelity control, as desired, by changing response of audio amplifying system.

Purpose and Function of Positions of Fidelity Control

Position	Reception of—	I-F Channel*	Audio Channel	A. F. C.	"Electric Tuning"
No. 1	Distant Stations	Sharp (5)	Min. Highs	Off	Off
No. 2	Distant Stations	Med. Sharp (6)	Max. Highs	Off	Off
No. 3	Local and medium distant stations	Sharp (5)	Min. Highs	On	On
No. 4	Same as above	Sharp (5)	Max. Highs	On	On
No. 5	Local Stations	Med. Sharp (6)	Max. Highs	On	On
No. 6	Local Stations	Med. Broad (7)	Max. Highs	On	On
No. 7 { Extreme Clockwise }	Local Stations	Broad (8)	Max. Highs	On	On

* Numbers in this column refer to curves shown under Alignment Table.

ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown below, illustrate the general shape of the i-f selectivity curves for different settings of the Fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the top view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

Output Meter Alignment.—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 4 and 7 of alignment table given below. However, a listening check should be made to check operation of Fidelity control, after receiver has been aligned.

Test Oscillator.—For all alignment operations connect the "Gnd" side of test oscillator to chassis, the high side as indicated in table, and keep output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

Using RCA Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the magic eye may be used as an output indicator for this unmodulated signal.

Precautionary Lead Dress

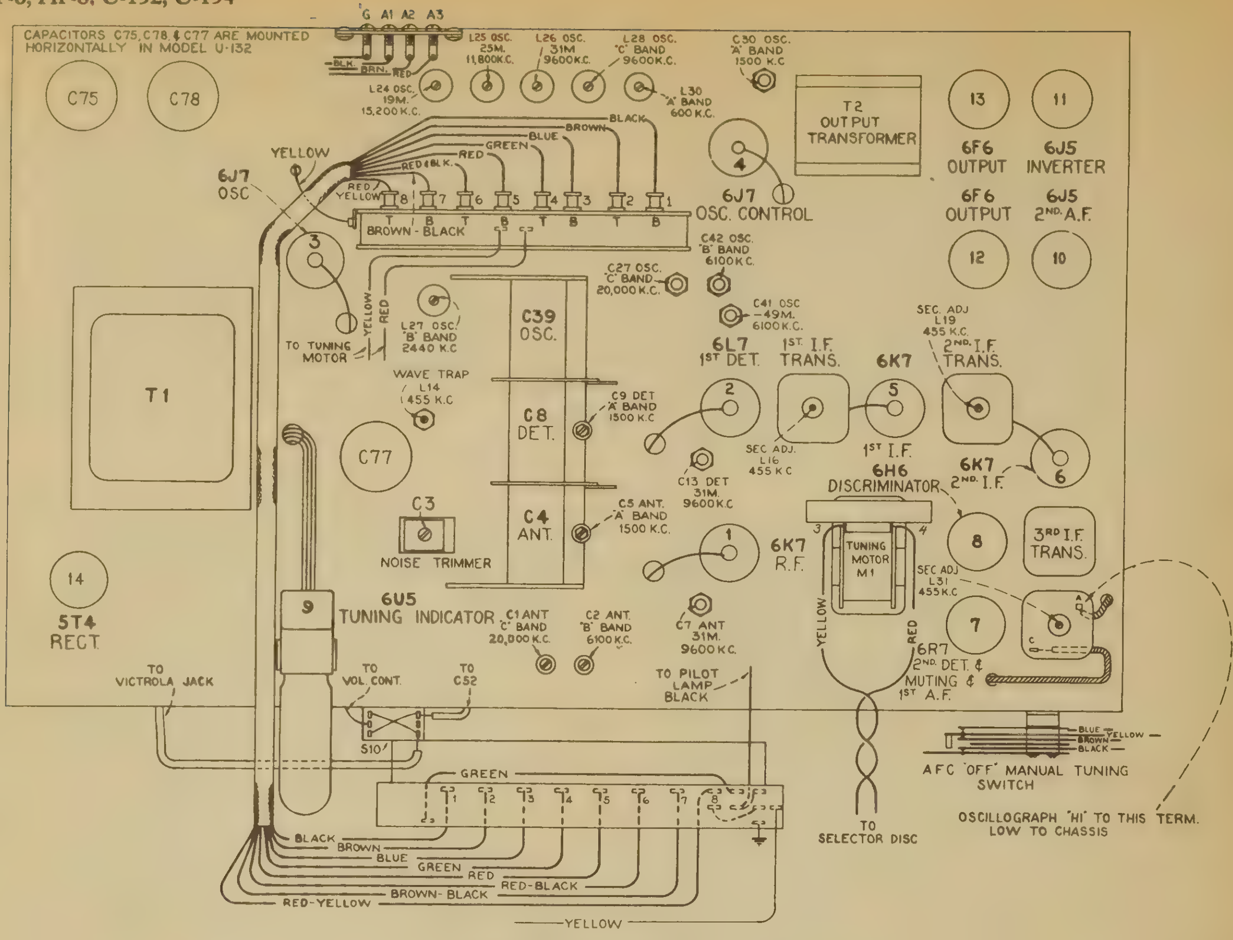
1. C-31, C-32, C-33, C-35, C-36, C-40 should be connected with as short leads as possible.
2. "Osc. Control" grid lead should be dressed away from the high side of "A" Band Oscillator trimmer.
3. The lead from "A" Band R-F Coil to the R-F Tube should be dressed away from chassis and shield.
4. Lead from "A" to "C" Band Antenna Coils should be dressed away from the shield.
5. The antenna leads inside the chassis should go directly to the terminals to which they connect.
6. The lead from the rectifier tube to the first filter capacitor should be dressed away from the Victrola connection.
7. The leads to the push-button switches should be dressed away from the Victrola switch, and its associated parts.
8. The output transformer primary leads should be dressed down to the chassis.
9. The 2nd Detector Diode lead should be dressed away from the lead to the discriminator diode. This latter lead should be dressed down to the chassis.

Additional Critical Leads—Models HF-6, U-132

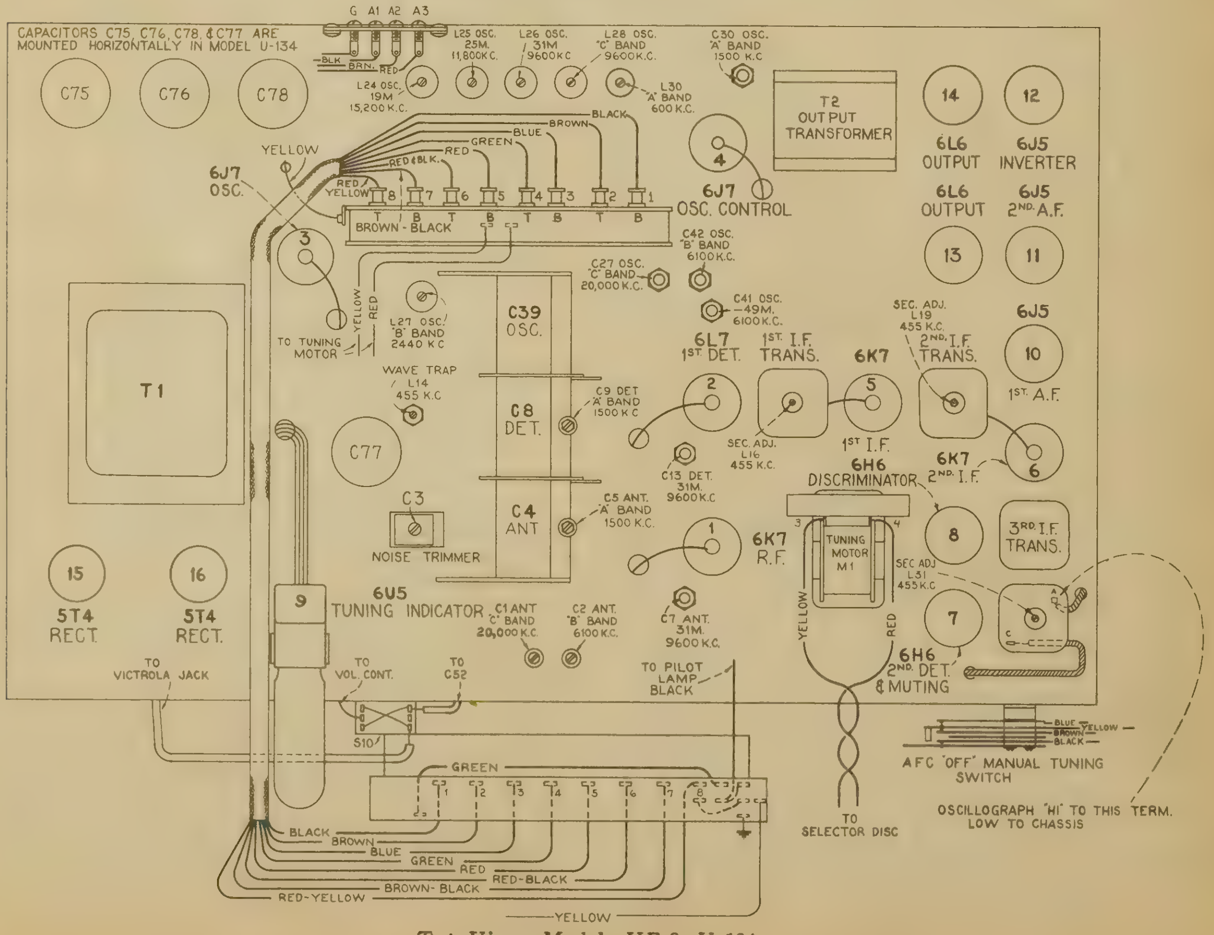
10. Dress Pilot Light leads away from 6R7 grid cap.

Additional Critical Leads—Models U-132, U-134

11. R-103 and R-102 should be dressed away from each other.



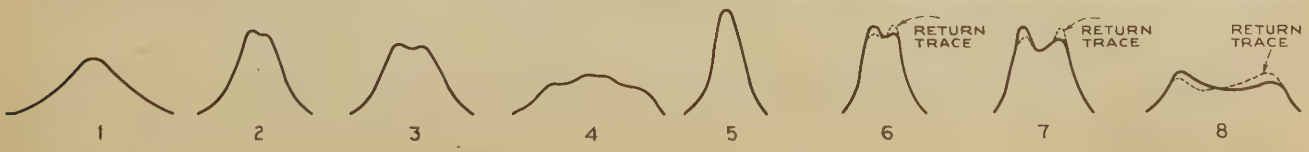
Top View—Models HF-6, U-132



Top View—Models HF-8, U-134

Alignment Table

Step	Connect High Side of Test Oscillator to—	Tune Test Oscillator to—	Range Selector	Set Tuning Gang to—	Adjust following for maximum peak output	Check for Selectivity Curve No.
1	Turn fidelity switch to maximum counter-clockwise (No. 1) position.					
2	6K7 2nd I-F Grid Cap in series with .01 mfd.	455 KC	"A"	Quiet Point Between 550 and 750 KC	L21 3rd I-F Trans. L31-L32 4th I-F Trans.	1
3	6K7 1st I-F Grid Cap in series with .01 mfd.	455 KC	"A"		L18, L19 2nd I-F Trans.	2
4	6K7 1st I-F Grid Cap in series with .01 mfd.	455 KC	"A"		Turn Fidelity Control Clockwise to No. 6 position	3
					Turn Fidelity Control Clockwise to No. 7 position	4
5	Turn Fidelity Control to maximum counter-clockwise (No. 1) position.					
6	6L7 1st Det. Grid in series with 300 ohms *Remove Grid Lead*	455 KC	"A"	Quiet Point Between 550 and 750 KC	L15, L16, 1st I-F Trans.	5
7	6L7 1st Det. Grid in series with 300 ohms	455 KC	"A"		Turn Fidelity Control Clockwise to No. 5 position	6
					Turn Fidelity Switch Clockwise to position No. 6	7
					Turn Fidelity Switch Clockwise to position No. 7	8
8	Turn Fidelity Control to maximum counter-clockwise (No. 1) position.					*NOTE: In Step 19 only, oscillator tracks on low side of signal; use maximum inductance peak (plunger in) if two peaks can be obtained. All other oscillator trimmers use minimum, inductance or capacity peak (plunger out), if two peaks can be obtained.
9	A2 in series with 100 mmf, A1 to Gnd.	600 KC	"A"	600 KC 29°	L30, osc.	
10	A2 in series with 100 mmf, A1 to Gnd.	1,500 KC	"A"	1,500 KC 152.5°	C30, osc.; C5, ant.; C9, det.	
11	A2 in series with 100 mmf, A1 to Gnd.	455 KC	"A"	600 KC 29°	L14, wave trap *Minimum output*	
12	A2 in series with 100 mmf, A1 to Gnd.	6,100 KC	"B"	6,100 KC 147°	C42, osc.; C2, ant.	
13	A2 in series with 100 mmf, A1 to Gnd.	2,440 KC	"B"	2,440 KC 15°	L27, osc.	
14	A2 in series with 100 mmf, A1 to Gnd.	6,100 KC	"B"	6,100 KC 147°	C42	
15	A2 in series with 47 ohms, A3 to Gnd.	20,000 KC	"C"	20,000 KC 156°	C27, osc.; C1, ant.	
16	A2 in series with 47 ohms, A3 to Gnd.	9,600 KC	"C"	9,600 KC 57°	L28, osc.	
17	A2 in series with 47 ohms, A3 to Gnd.	20,000 KC	"C"	20,000 KC 156°	C27, osc.	
18	A2 in series with 47 ohms, A3 to Gnd.	9,600 KC	"31M"	9,600 KC 99°	L26, osc.; C7, ant.; C13, det.	
19*	A2 in series with 47 ohms, A3 to Gnd.	6,100 KC	"49M"	6,100 KC 103°	C41, osc.	
20	A2 in series with 47 ohms, A3 to Gnd.	11,800 KC	"25M"	11,800 KC 90°	L25, osc.	
21	A2 in series with 47 ohms, A3 to Gnd.	15,200 KC	"19M"	15,200 KC 79°	L24, osc.	
22	Proceed to A.F.C. discriminator adjustments.					



I-F Selectivity Curves

A. F. C. Alignment.—After receiver has been fully aligned, turn Fidelity control to No. 1 position, tune in a station of medium signal strength in the neighborhood of 550-650 kc, or, if it is necessary to use a local station for this signal, cut down length of antenna so that signal is about medium strength. Carefully tune in the station using the "Magic Eye" as an indicator. Tune test oscillator to 455 kc, turn output to maximum, and "Modulation" off. Connect "Gnd" side of test oscillator to chassis, and bring the lead from the high side of test oscillator near the grid lead of 1st detector, 6L7 tube, until a beat note can be heard in the loudspeaker. Do not bring lead any closer than 1 inch to grid lead of 6L7, or detuning of circuit will result, and the adjustment will not be accurate.

Adjust frequency of test oscillator till beat-note heard in loudspeaker is at zero-beat. Turn Fidelity control to No. 3 position, and a beat note will again be heard. Adjust trimmer, L32, bottom of 4th i-f transformer, till beat note heard is again at zero-beat. Turn Fidelity control to No. 1 position, and check for zero-beat. When properly adjusted turning Fidelity control from No. 1 to No. 3 position should not affect zero-beat.

With Fidelity control in No. 1 position, tune receiver off resonance. Turn Fidelity control to No. 3 position—station should "fall" into resonance due to A. F. C. action. Push in Tuning Control Shaft without turning it—station should again be off resonance as originally tuned.

Miscellaneous Service Data

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C3 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C3 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

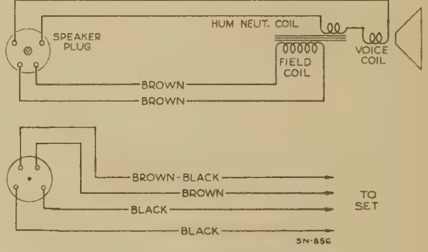
This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

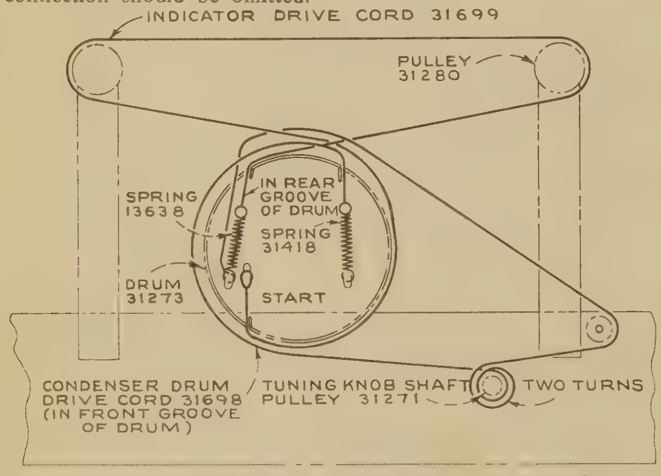
Loudspeaker.—No attempt should be made to remove the aluminum cone cap of the loudspeaker cone. This is securely cemented to the cone, and any attempt to remove it may result in serious damage to the cone assembly. The cone must be centered by moving the cone in and out and getting the "feel" of the cone to find where it is rubbing against the pole pieces. The two screws holding the spider support are accessible from the rear of the speaker. By loosening these screws and moving the cone by hand, it is possible to center the cone satisfactorily. Another method, which may be used, is to connect speaker to receiver, feed a low frequency note of from 40-60 cycles into the audio input of the set, and turning up the volume control — move the spider support until no rattle is heard in speaker, with about 10 watts output. Replacement cones will have to be centered in the same manner, as the cone will be supplied with cone cap fastened securely in position.

NOTE.—Due to inverse feedback used on these models, it is very important to connect output transformers exactly as shown in the schematic diagram.

Victrola Attachment.—A jack located on one side of the chassis is provided for connecting a Victrola Attachment into the audio-amplifying circuit on Models HF-6 and HF-8. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

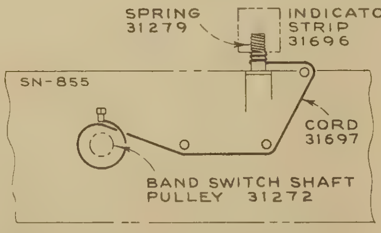


Connections to Loudspeaker



INDICATOR DRIVE CORD 31699
PULLEY 31280
SPRING 13638
IN REAR GROOVE OF DRUM
SPRING 31418
DRUM 31273
START
CONDENSER DRUM DRIVE CORD 31698 (IN FRONT GROOVE OF DRUM)
TUNING KNOB SHAFT PULLEY 31271
TWO TURNS

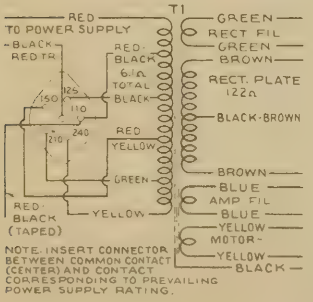
TUNING CONDENSER IN FULL MESH POSITION



BAND INDICATOR DRIVE CORD

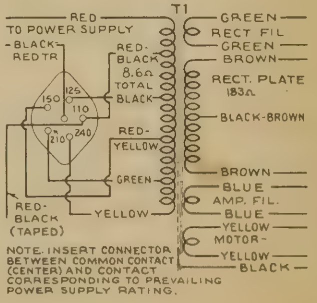
Details of Tuning Mechanism Models HF-8, U-132, U-134

Note: Tuning Mechanism of Model HF-6 is similar to this shown, except Indicator drive cord is Stock No. 31281.



Models HF-8, U-134

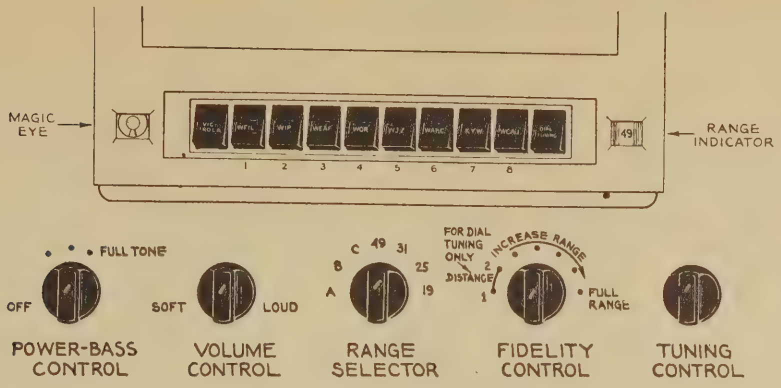
(110-volt supply for a Victrola motor is obtained by connecting the motor to the red and the red-black leads.)



Models HF-6, U-132

Universal Power Transformer Connections

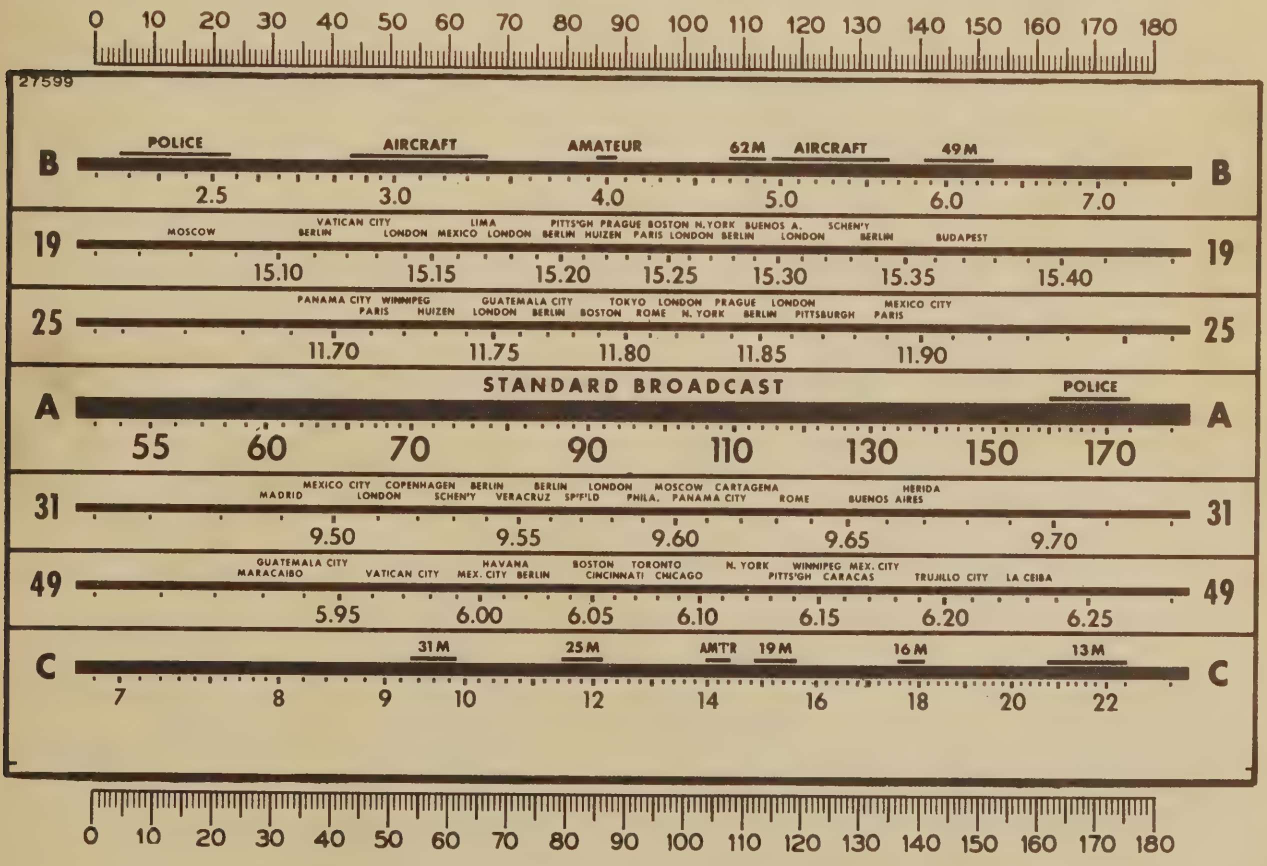
ADJUSTMENTS FOR ELECTRIC TUNING



Location of Controls

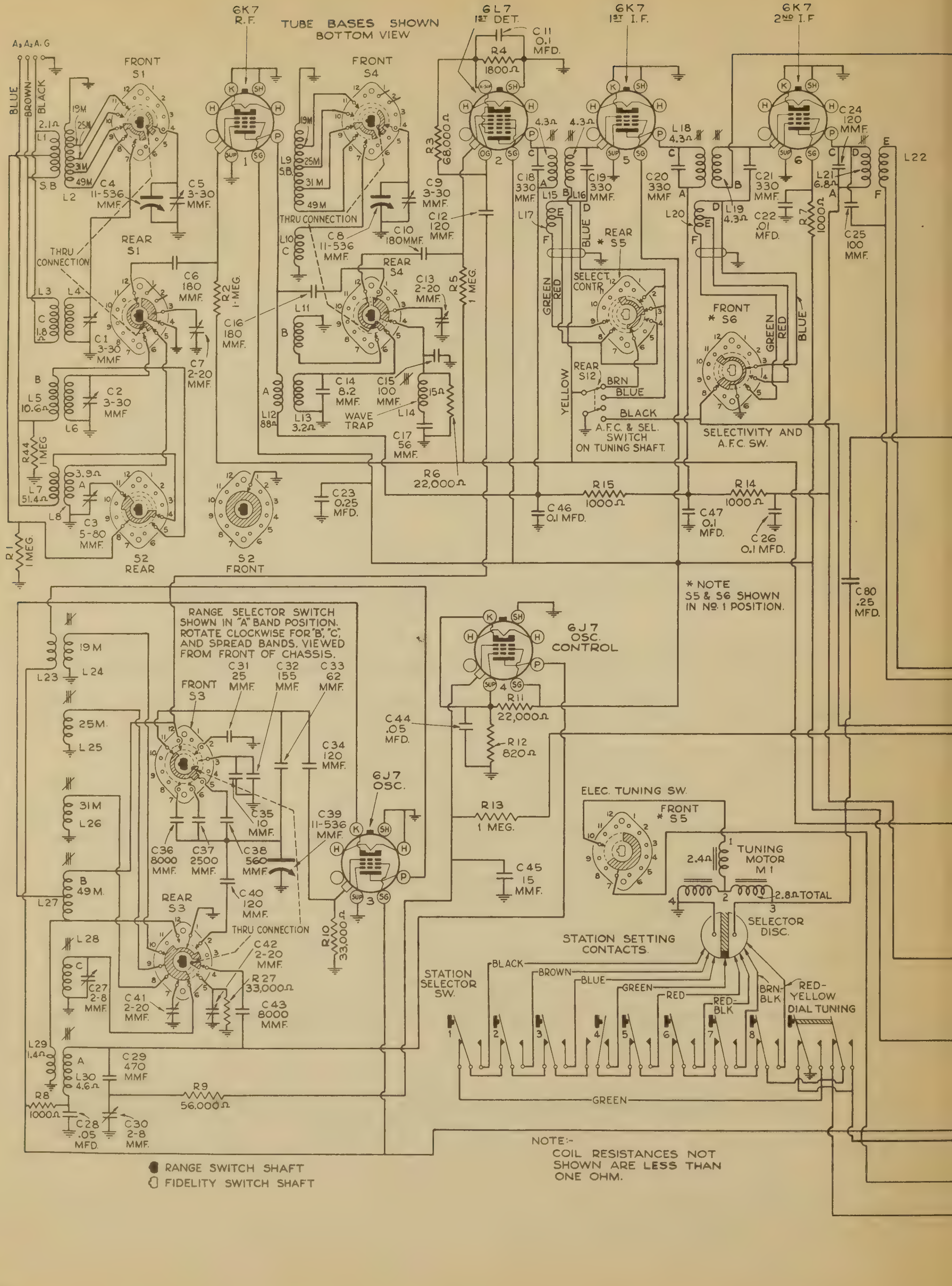
The left-hand push-button is a Victrola-Attachment switch.
The right-hand push-button is for dial tuning.

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Turn Fidelity Control maximum counter-clockwise.
4. Press down the "dial-tuning" (right hand) button.
5. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
6. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down, central dial lamp will light brightly or dully, depending on which side of disc, the contact is. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.



Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Scale

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example 90° on the calibration scale corresponds approximately to 11.8 mc on the 25-meter band, and 940 kc on "A" band, etc. Read instructions under "Alignment Procedure."

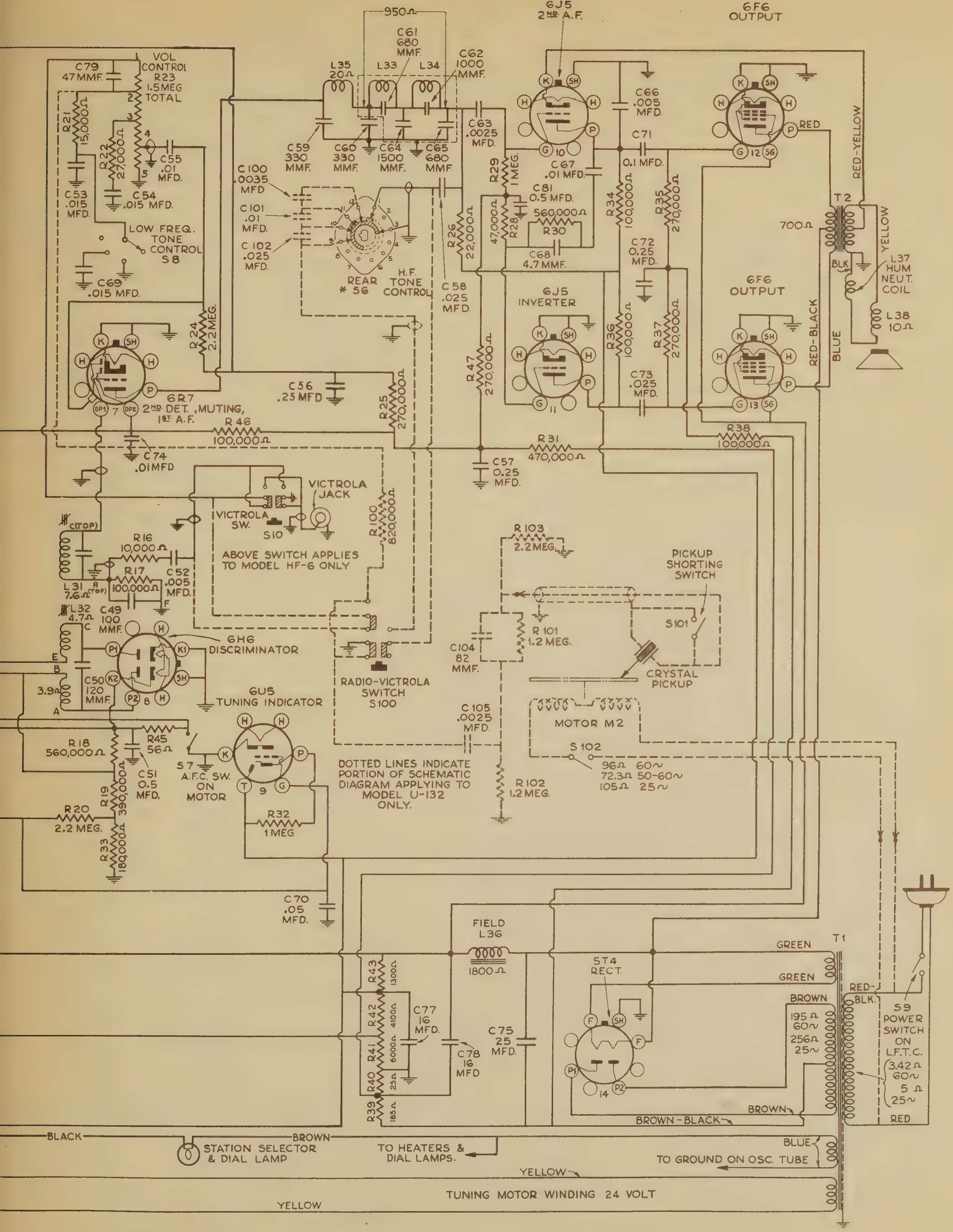


RANGE SELECTOR SWITCH SHOWN IN "A" BAND POSITION. ROTATE CLOCKWISE FOR "B", "C", AND SPREAD BANDS. VIEWED FROM FRONT OF CHASSIS.

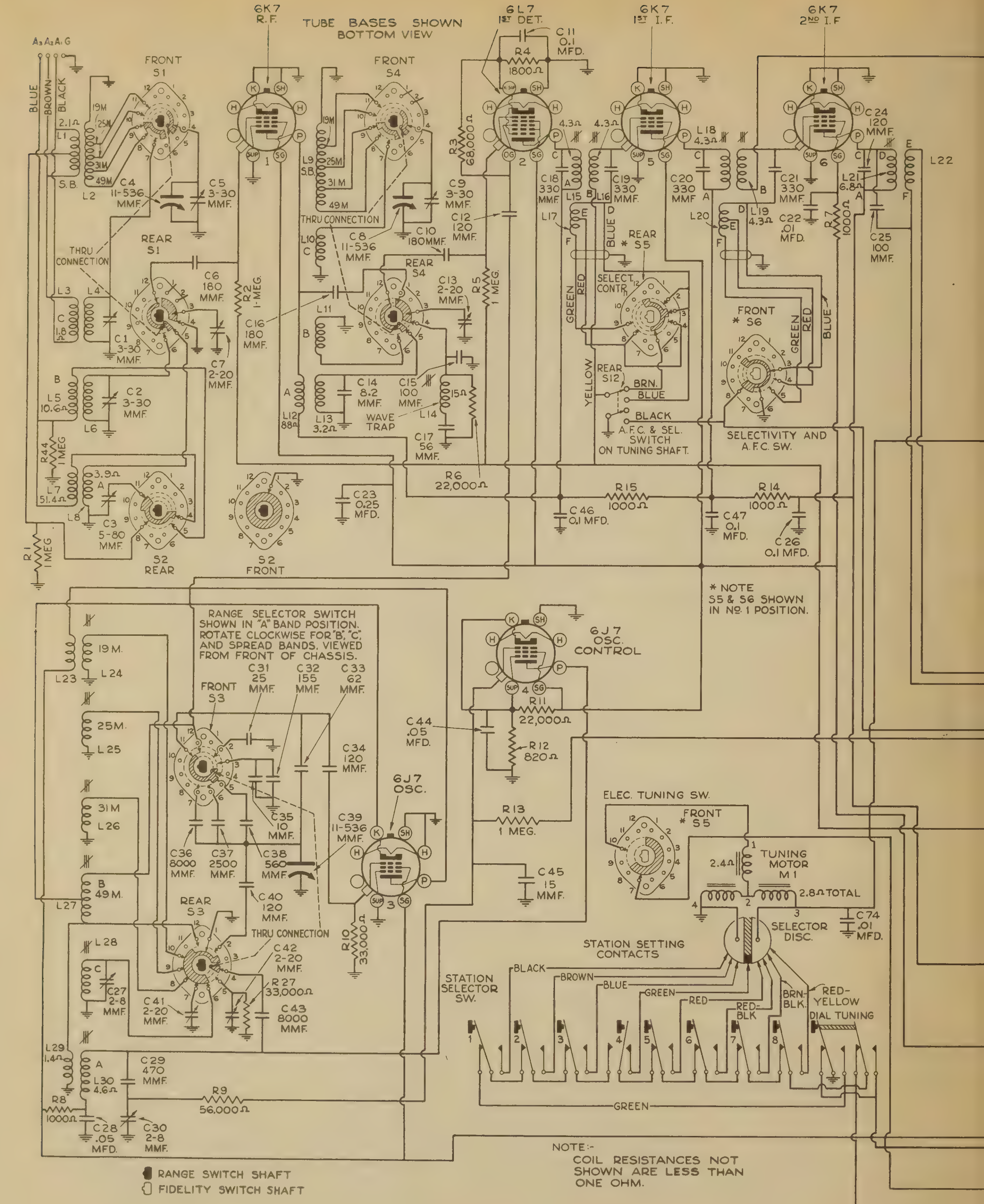
* NOTE
S5 & S6 SHOWN IN No. 1 POSITION.

NOTE:-
COIL RESISTANCES NOT SHOWN ARE LESS THAN ONE OHM.

● RANGE SWITCH SHAFT
○ FIDELITY SWITCH SHAFT



Schematic Circuit Diagram—Models HF-6, U-132



TUBE BASES SHOWN BOTTOM VIEW

RANGE SELECTOR SWITCH SHOWN IN "A" BAND POSITION. ROTATE CLOCKWISE FOR "B", "C", AND SPREAD BANDS. VIEWED FROM FRONT OF CHASSIS.

* NOTE
S5 & S6 SHOWN IN NO. 1 POSITION.

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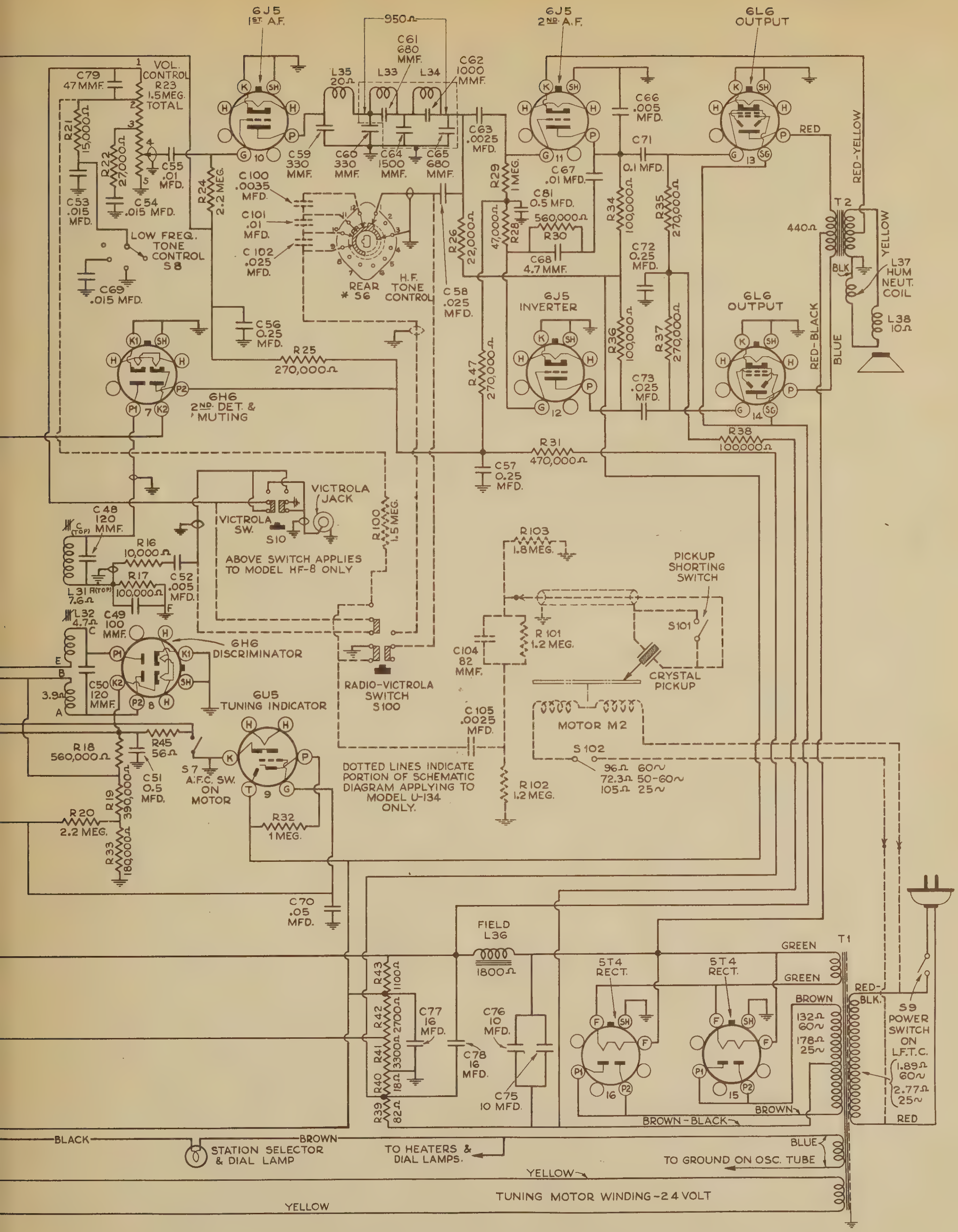
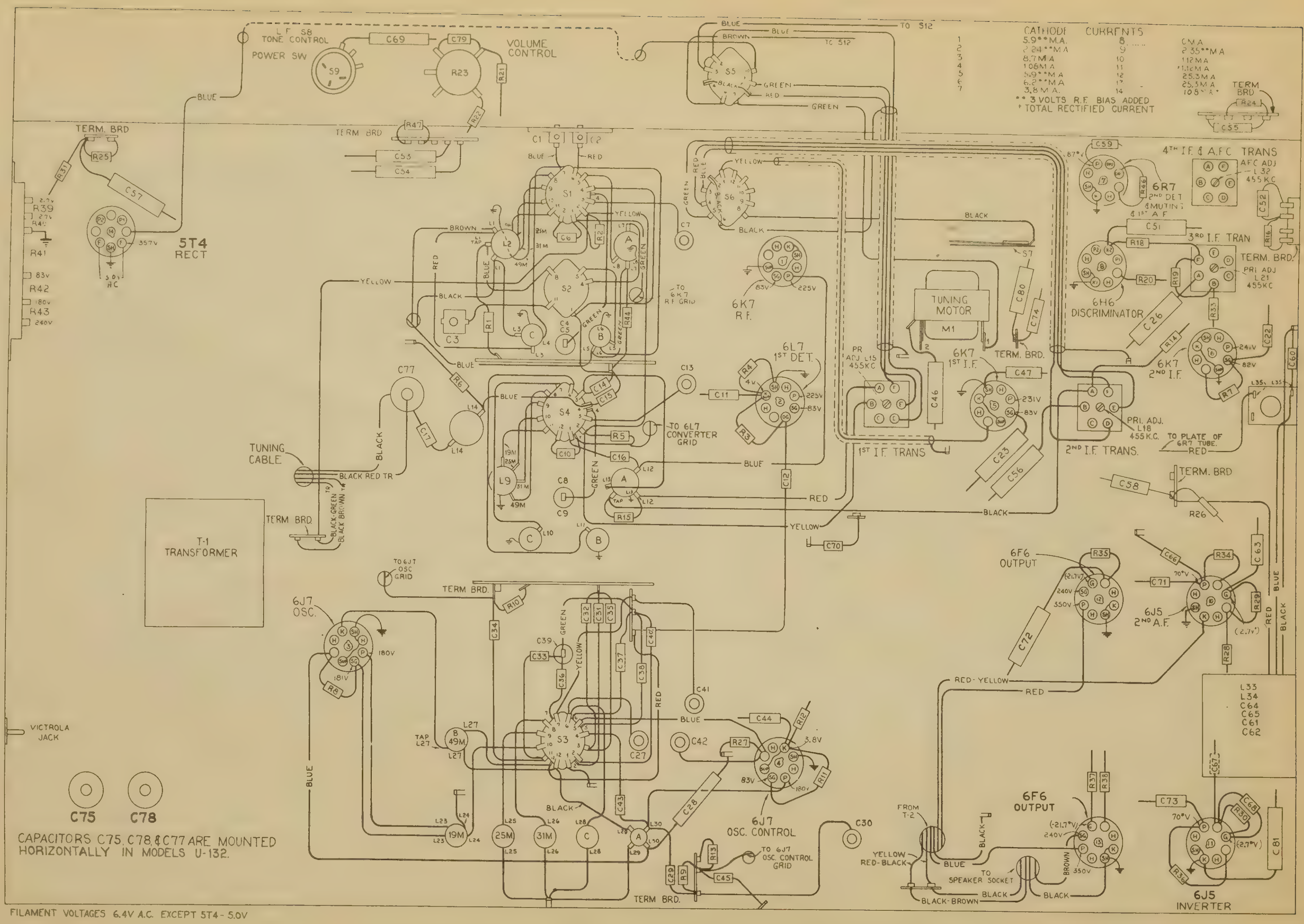
■ RANGE SWITCH SHAFT
□ FIDELITY SWITCH SHAFT



Schematic Circuit Diagram—Models HF-8, U-134



CATHODE CURRENTS

1	5.9**M.A.	8	0 MA
2	2.24**MA	9	2.35**MA
3	8.7MA	10	1.12MA
4	108MA	11	†1.12MA
5	5.9**MA	12	25.3MA
6	6.2**MA	13	25.3MA
7	3.8MA.	14	108MA†

** 3 VOLTS R.F. BIAS ADDED

† TOTAL RECTIFIED CURRENT

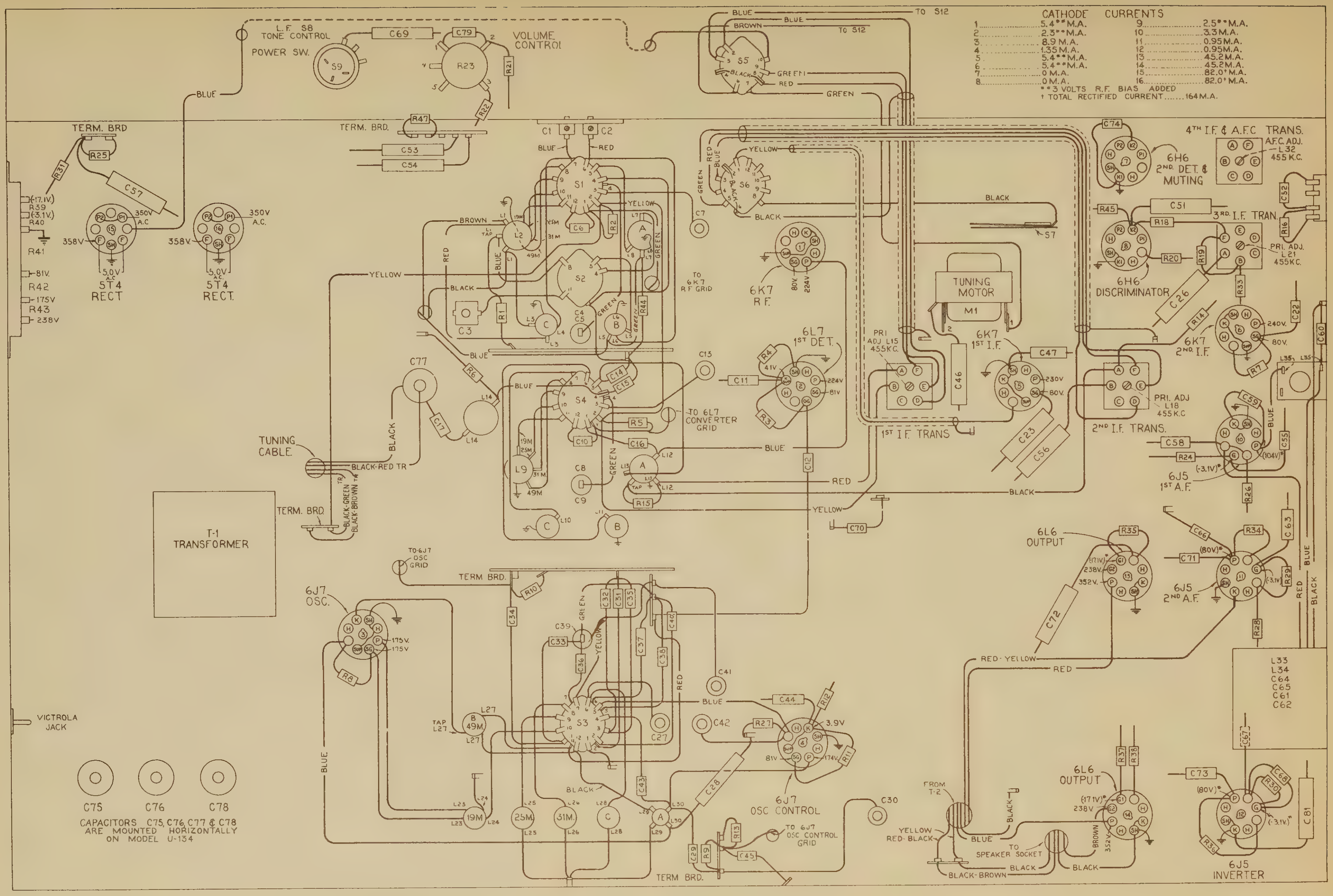
CAPACITORS C75, C78, & C77 ARE MOUNTED HORIZONTALLY IN MODELS U-132.

FILAMENT VOLTAGES 6.4V A.C. EXCEPT 5T4 - 5.0V

R-F Wiring, Parts Location and Socket Voltage Diagram—Models HF-6, U-132

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.



R-F Wiring, Parts Location and Socket Voltage Diagram—Models HF-8, U-134

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to last I-F tube, 1st audio, 2nd audio and inverter tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal operating position.

Adjustment of Selector Disc

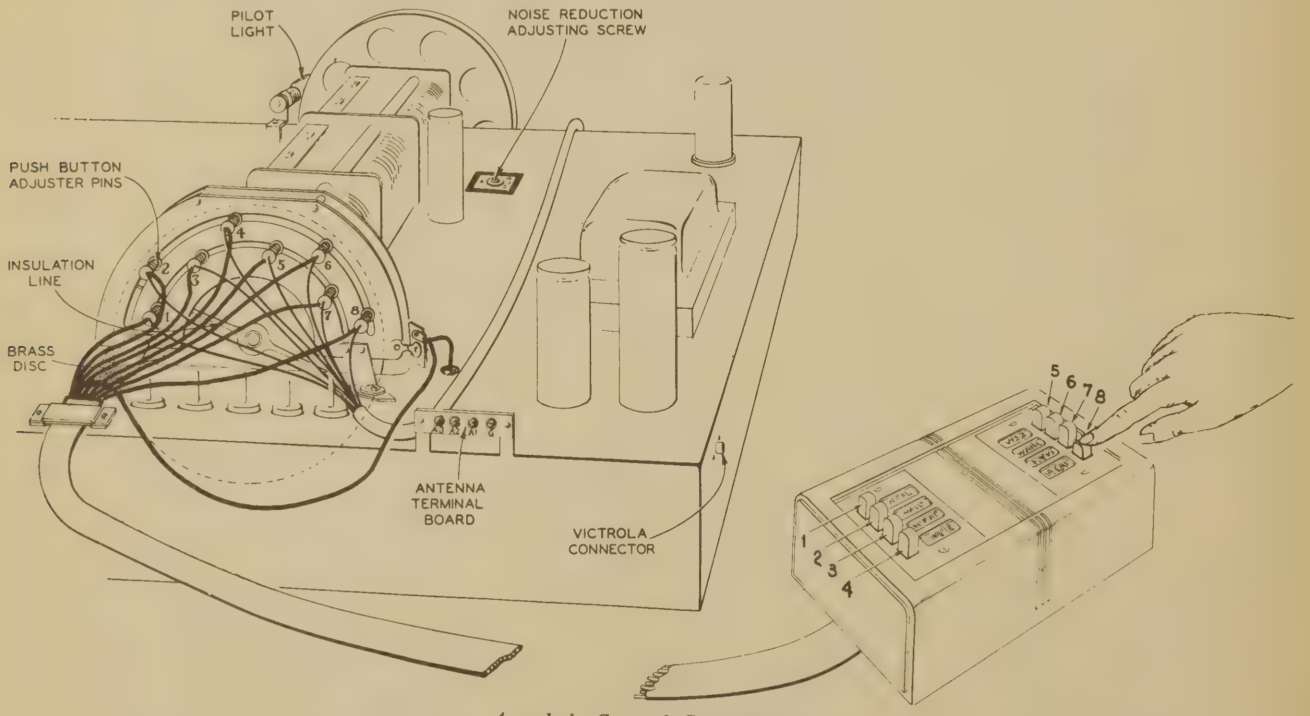
The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

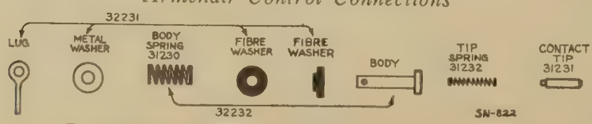
Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver, as shown, it duplicates the action of the push buttons on the front panel, when "Dial or Remote" button is pushed in. The center lead of the remote control cable is connected to the terminal on the frame of the selector mechanism. The other leads are connected to corresponding station-setting contacts.

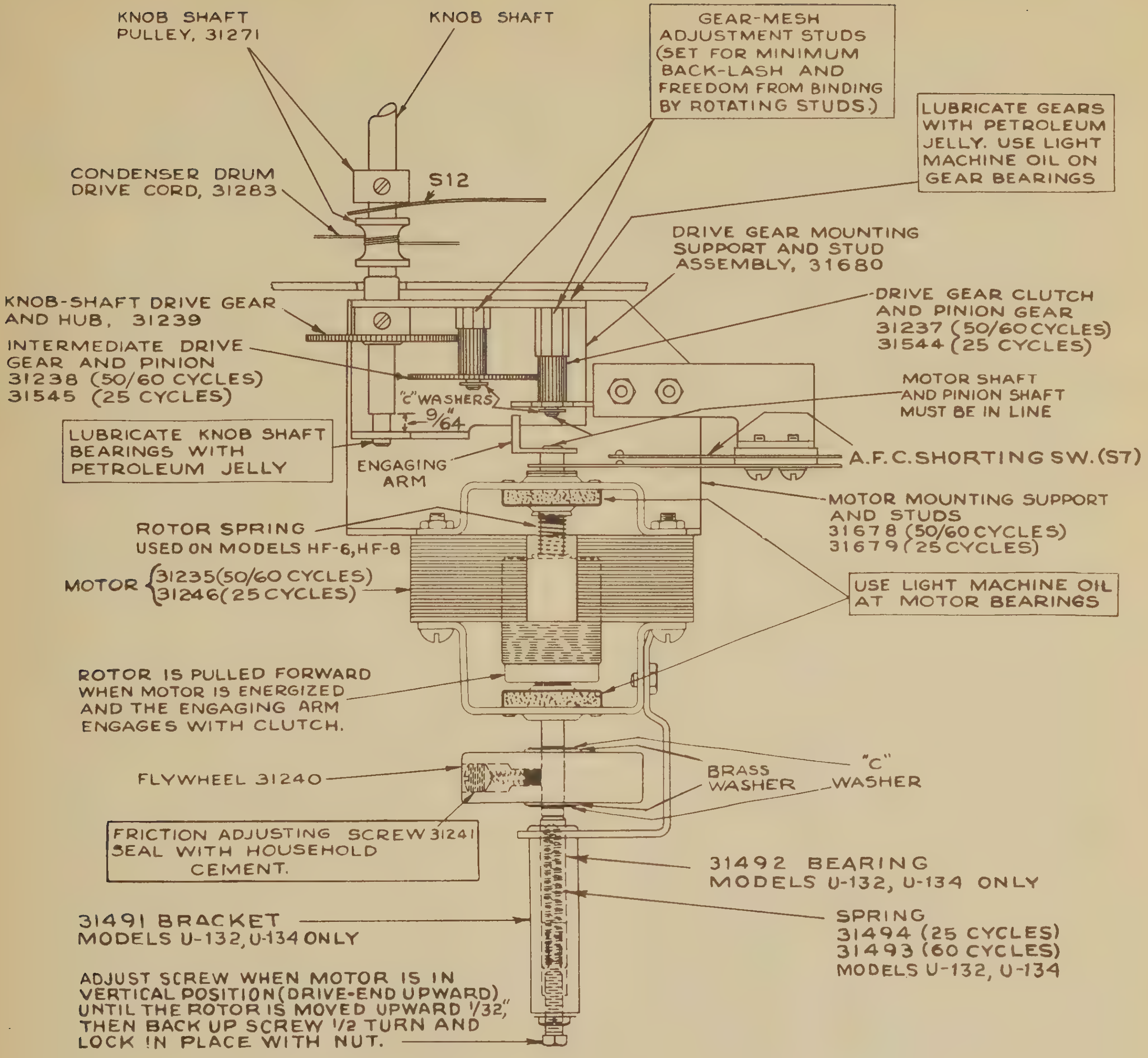
In operating the G8A Armchair Control, the push button must be held down until the station has been tuned in. Care must be taken not to hold two of the station buttons down at one time as both windings of the motor may be engaged simultaneously causing the motor to be inoperative and overheated.



Armchair Control Connections



Component Parts of Station Setting Contacts


KNOB SHAFT PULLEY, 31271
KNOB SHAFT
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
CONDENSER DRUM DRIVE CORD, 31283
S12
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31680
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
9/64"
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ENGAGING ARM
A.F.C. SHORTING SW. (S7)
MOTOR MOUNTING SUPPORT AND STUDS 31678 (50/60 CYCLES) 31679 (25 CYCLES)
ROTOR SPRING USED ON MODELS HF-6, HF-8
MOTOR 31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
31492 BEARING MODELS U-132, U-134 ONLY
31491 BRACKET MODELS U-132, U-134 ONLY
SPRING 31494 (25 CYCLES) 31493 (60 CYCLES) MODELS U-132, U-134
ADJUST SCREW WHEN MOTOR IS IN VERTICAL POSITION (DRIVE-END UPWARD), UNTIL THE ROTOR IS MOVED UPWARD 1/32", THEN BACK UP SCREW 1/2 TURN AND LOCK IN PLACE WITH NUT.

Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Adjustments

To adjust S12, loosen knob shaft pulley, and adjust it so that when shaft is pushed all the way in, the ends of the leaves of S12 will be deflected 1/32-inch from their original position. When tuning shaft is released, distance between contacts of S12 should be 1/32-inch.

S7 should be adjusted so that when motor is in its full forward or upward position, the ends of the leaves should be deflected 1/32-inch from their original position.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31492	Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly —Models U-132 and U-134 only	
31253	Board—Antenna-ground terminal board—Models HF-6 and HF-8 only	
31752	Board—Antenna-ground terminal board—Models U-132 and U-134 only	
31276	Bracket—Band indicator mounting bracket—less band indicating strip, cord, and tension spring	
31491	Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment — Models U-132 and U-134 only	
31282	Bracket—"Magic Eye" bracket and clip	
31712	Cable—3-conductor shielded fidelity switch cable.	
31711	Cable—4-conductor shielded fidelity switch cable.	
31710	Cable—Low capacity phono. cable	
31715	Cable—Push-button switch-to-selector contacts cable	
30766	Cap—Shield cap for "Magic Eye"	
12607	Cap—Top shield cap for first, second, or fourth i-f transformer	
12807	Capacitor—Adjustable trimmer, 2-8 mmfd. (C27, C30)	
12884	Capacitor—Adjustable trimmer, 2-20 mmfd. (C7, C13, C41, C42)	
31292	Capacitor—Dual adjustable trimmer, 3-30 mmfd. each section (C1, C2)	
14392	Capacitor—4.7 mmfd. (C68)	
31252	Capacitor—Adjustable trimmer, 5-80 mmfd. (C3)	
13001	Capacitor—8.2 mmfd. (C14)	
31709	Capacitor—10 mmfd. (C35)	
12896	Capacitor—15 mmfd. (C45)	
31707	Capacitor—25 mmfd. (C31)	
13141	Capacitor—47 mmfd. (C79)	
12723	Capacitor—56 mmfd. (C17)	
31705	Capacitor—62 mmfd. (C33)	
12813	Capacitor—82 mmfd. (C104) — Models U-132 and U-134 only	
31270	Capacitor—100 mmfd. (C25, C49)	
12720	Capacitor—100 mmfd. (C15)	
31706	Capacitor—120 mmfd. (C40)	
12724	Capacitor—120 mmfd. (C12, C34)	
31757	Capacitor—120 mmfd. (C24, C48, C50)	
31708	Capacitor—155 mmfd. (C32)	
13003	Capacitor—180 mmfd. (C6, C10, C16)	
12952	Capacitor—330 mmfd. (C59, C60)	
31756	Capacitor—330 mmfd. (C18, C19, C20, C21).	
30433	Capacitor—470 mmfd. (C29)	
31702	Capacitor—560 mmfd. (C38)	
31703	Capacitor—2,500 mmfd. (C37)	
31704	Capacitor—8,000 mmfd. (C36, C43)	
5107	Capacitor—.0025 mfd. (C63, C105)—C105 in Models U-132 and U-134 only	
30303	Capacitor—.0035 mfd. (C100)—Models U-132 and U-134 only	
4838	Capacitor—.005 mfd. (C52, C56)	
14393	Capacitor—.01 mfd. (C22, C55, C67, C74, C101)—C101 in Models U-132 and U-134 only	
11315	Capacitor—.015 mfd. (C53, C54, C69)	
30938	Capacitor—.025 mfd. (C58, C73, C102)—C102 in Models U-132 and U-134 only	
4886	Capacitor—.05 mfd. (C28)	
30882	Capacitor—.05 mfd. (C44, C70)	
4839	Capacitor—0.1 mfd. (C26, C46, C11, C47)	
30899	Capacitor—0.1 mfd. (C71)	
30965	Capacitor—0.25 mfd. (C56, C72, C23, C57, C80)—C80 used in Models HF-6 and U-132 only	
31701	Capacitor—0.5 mfd. (C51, C81)	
11203	Capacitor—10 mfd. (C75, C76)—Models HF-8 and U-134 only	
14377	Capacitor—16 mfd. (C77)	
5212	Capacitor—16 mfd. (C78)—Models HF-6 and HF-8 only	
31751	Capacitor—16 mfd. (C78)—Models U-132 and U-134 only	
14531	Capacitor—25 mfd. (C75)—Model HF-6 only.	
31753	Capacitor—25 mfd. (C75)—Model U-132 only.	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—for 25-cycle models only	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—for 50/60-cycle models only	
31669	Coil—"A" band antenna coil (L7, L8)	
31689	Coil—"A" band oscillator coil (L29, L30)	
31672	Coil—"A" band r-f coil (L12, L13)	
31670	Coil—"B" band antenna coil (L5, L6)	
31690	Coil—"B" and 49-meter band oscillator coil (L27)	
14952	Coil—"B" band r-f coil (L11)	
31671	Coil—"C" band antenna coil (L3, L4)	
31255	Coil—"C" or 31-meter band oscillator coil (L26, L28)	
14953	Coil—"C" band r-f coil (L10)	
12819	Coil—Choke coil (L35)	
31688	Coil—19-meter band oscillator coil (L23, L24).	
31254	Coil—25-meter band oscillator coil (L25)	
31673	Coil—49-, 31-, 25-, and 19-meter bands antenna coil (L1, L2)	
14954	Coil—49-, 31-, 25-, and 19-meter bands r-f coil (L9)	
31676	Condenser—3-gang variable (C4, C5, C8, C9, C39)	
31231	Contact—Contact tip for selector plunger	
31345	Contact—Push-button switch contacts, comprising 10-contacts riveted on insulating strip	
31344	Contact—Push-button switch contacts, comprising 13-contacts riveted on insulating strip	
31697	Cord—Band indicator drive cord	
31281	Cord—Pointer drive cord—Model HF-6 only	
31699	Cord—Pointer drive cord—Models HF-8, U-132 and U-134 only	
31698	Cord—Variable condenser drive cord	
31273	Drum—Variable condenser drive cord drum	
31686	Filter—10-kc filter (L33, L34, C61, C62, C64, C65)	
31240	Flywheel—Variable condenser drive motor flywheel	
31239	Gear—Variable condenser knob shaft drive gear and hub	
31545	Gear—Variable condenser intermediate drive gear and pinion gear — for 25-cycle models only	
31238	Gear—Variable condenser intermediate drive gear and pinion gear—for 50/60-cycle models only	
31696	Indicator—Band indicator strip	
31480	Lamp—Electric Tuning adjustment indicator lamp	
11891	Lamp—Dial lamp	
31243	Leather—Friction leather for flywheel	
31346	Lock Plate — Push-button switch lock plate, comprising 10-contact locks in one strip	
31246	Motor—Variable condenser drive motor—for 25-cycle models only (M1)	
31235	Motor—Variable condenser drive motor — for 50/60-cycle models only (M1)	
12471	Plate—Mounting plate and rubber for cushion socket—less socket	
31227	Plate—Selector mounting plate and spacers—mounts on rear of variable condenser	
31228	Plate—Selector contact plate—less plungers	
30868	Plug—2-contact female plug for motor power cable—Models U-132 and U-134 only	
5040	Plug—4-contact female plug for speaker cable	
14697	Pulley—Variable condenser drive cord intermediate pulley	
31280	Pulley—Indicator pointer drive cord pulley	
31272	Pulley—Range switch shaft pulley	
31271	Pulley—Station selector knob shaft pulley	
31693	Resistor—Voltage divider, comprising one 82-ohm, one 18-ohm, one 3,300-ohm, one 2,700-ohm, one 1,100-ohm sections (R39, R40, R41, R42, R43)—Models HF-8 and U-134 only	
31694	Resistor—Voltage divider, comprising one 165-ohm, one 25-ohm, one 6,000-ohm, one 4,100-ohm, and one 1,300-ohm sections (R39, R40, R41, R42, R43)—Models HF-6 and U-132 only	
13220	Resistor—56 ohms, ¼ watt (R45)	
14076	Resistor—820 ohms, ¼ watt (R12)	
14720	Resistor—1,000 ohms, ¼ watt (R7, R8, R14, R15)	
12194	Resistor—1,800 ohms, ¼ watt (R4)	
14559	Resistor—10,000 ohms, ¼ watt (R16)	
12695	Resistor—15,000 ohms, ¼ watt (R21)	
13998	Resistor—22,000 ohms, ¼ watt (R6)	
30492	Resistor—22,000 ohms, ¼ watt (R11, R26)	
12738	Resistor—27,000 ohms, ¼ watt (R22)	
12454	Resistor—33,000 ohms, ¼ watt (R10, R27)	
12412	Resistor—47,000 ohms, ¼ watt (R28)	
12286	Resistor—56,000 ohms, ¼ watt (R9)	
13715	Resistor—68,000 ohms, ¼ watt (R3)	
14560	Resistor—100,000 ohms, ¼ watt (R17, R34, R36, R38, R46)—R46 used in Models HF-6 and U-132 only	
13698	Resistor—180,000 ohms, ¼ watt (R33)	
12199	Resistor—270,000 ohms, ¼ watt (R25, R35, R37, R47)	
13479	Resistor—390,000 ohms, ¼ watt (R19)	
12285	Resistor—470,000 ohms, ¼ watt (R31)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
12486	Resistor—560,000 ohms, ¼ watt (R18, R30)	
30963	Resistor—820,000 ohms, ¼ watt (R100)—Model U-132 only	
12013	Resistor—1 meg., 1/10 watt (R32)	
13730	Resistor—1 meg., ¼ watt (R1, R2, R5, R13, R29, R44)	
5028	Resistor—1.8 meg., ¼ watt (R103)—Model U-134 only	
12201	Resistor—1.5 meg., ¼ watt (R100)—Model U-134 only	
30208	Resistor—1.2 meg., ¼ watt (R101, R102)—Models U-132 and U-134 only	
12679	Resistor—2.2 meg., ¼ watt (R20, R24, R103)—R103 in Model U-132 only	
14887	Retainer—Pointer drive cord pully retainer	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft	
31241	Screw—¼-20 x 3/16-in. headless, cone point set screw for flywheel	
14350	Screw—No. 8-32 square head set screw for rotor, Stock No. 31233	
5042	Screw—No. 8-32 x ⅛-in. headless set screw for pulley, Stock No. 31271	
4669	Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock No. 31272, and drum, Stock No. 31273	
4119	Screw—No. 8-32 x ¼-in. headless set screw for gear, Stock No. 31239	
31681	Shaft—Variable condenser drive knob shaft	
31364	Socket—Dial lamp socket—Models HF-6 and HF-8 only	
31365	Socket—Electric Tuning adjustment indicator lamp socket	
13871	Socket—"Magic Eye" socket	
14278	Socket—Phono. input socket	
31251	Socket—Tube socket	
31232	Spring—Contact tip spring for selector plunger	
13638	Spring—Pointer drive cord tension spring	
31230	Spring—Selector plunger body spring	
31279	Spring—Tension spring for band indicator	
31970	Spring—Tension spring for push-button switch latch bar	
31242	Spring—Tension spring for flywheel	
31418	Spring—Variable condenser drive cord tension spring	
31494	Spring—Variable condenser motor rotor adjustment bearing spring for 25-cycle models only—Models U-132 and U-134 only	
31493	Spring—Variable condenser motor rotor adjustment bearing spring for 50/60-cycle models only—Models U-132 and U-134 only	
31680	Support—Variable condenser drive gear mounting support and studs	
31679	Support—Variable condenser motor mounting support and studs—for 25-cycle models only	
31678	Support—Variable condenser motor mounting support and studs—for 50/60-cycle models only	
31677	Switch—Electric Tuning A.F.C. suppression switch (S7)	
31684	Switch—Fidelity switch (S5, S6)	
31683	Switch—L.f tone and power switch (S8, S9)	
31700	Switch—Manual Tuning A.F.C. and selectivity switch (S12)	
31360	Switch—Victrola switch for mounting on push-button switch assembly (S10)—Models HF-6 and HF-8 only	
31695	Switch—Push-button switch and bracket complete—Models HF-6 and HF-8 only	
31754	Switch—Push-button switch and bracket complete—Models U-132 and U-134 only	
31755	Switch—Radio-Phono. switch for mounting on push-button switch assembly (S100)—Models U-132 and U-134 only	
31668	Switch—Range switch only—less coils (S1, S2, S3, S4)	
31746	Transformer—First i-f transformer (L15, L16, L17, C18, C19)	
31749	Transformer—Second i-f transformer (L18, L19, L20, C20, C21)	
31747	Transformer—Third i-f transformer (L21, L22, C24, C25)	
31748	Transformer—Fourth i-f transformer (L31, L32, C48, C49, C50, R17)	
31687	Transformer—Output transformer (T2)—Models HF-6 and U-132 only	
31685	Transformer—Output transformer (T2)—Models HF-8 and U-134 only	
31885	Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)—Models HF-6 and U-132 only	
31884	Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)—Models HF-8 and U-134 only	
31692	Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1)—Models HF-6 and U-132 only	
31675	Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1)—Models HF-8 and U-134 only	
31691	Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1)—Models HF-6 and U-132 only	
31674	Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1)—Models HF-8 and U-134 only	
12654	Trap—Wave trap (L14)	
31682	Volume Control (R23)	
	MOTOR BOARD ASSEMBLIES Models U-132 and U-134 Only	
31149	Base—Tone arm mounting base	
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	
14209	Bumper—Main lever rubber bumper (1)	
9848	Cup—Used needle cup, rest, and lid complete	
31148	Escutcheon—Index escutcheon	
31151	Guide—Pickup lift cable guide (coil spring, 80T 2-in. long) (2)	
31150	Mounting—Pickup arm base rubber mounting complete	
31155	Spring—Needle cup lid tension spring	
	OPERATING MECHANISM Models U-132, U-134	
31134	Bracket—Pickup locating lever mounting bracket (3)	
31144	Cam—Cam and gear assembly (4)	
6808	Clutch—Trip lever friction clutch assembly (5)	
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	
31129	Cover—Cap for top of record post	
31116	Finger—Trip lever friction finger assembly (7)	
31119	Gear—Long arm and rack gear for front left-hand record post (8)	
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	
31121	Gear—Record post gear (10)	
31123	Guide—Main lever spring guide (11)	
31114	Lever—Index lever assembly (12)	
31137	Lever—Index lever tension spring lever (13)	
31138	Lever—Locating lever and pawl assembly (14)	
31113	Lever—Main lever assembly (15)	
31140	Lever—Pickup lift cable lever and spring assembly (16)	
31135	Lever—Pickup locating lever assembly (17)	
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	
31132	Lever—Trip detaining lever (19)	
31115	Lever—Trip lever assembly (20)	
31131	Lever—Trip regulator lever (21)	
31133	Pawl—Trip pawl assembly (22)	
31124	Pin—Record post drive pin (23)	
14207	Roller—Pickup lift cable roller and bracket assembly (24)	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	
31136	Spring—index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅝-in. O.D., ¾-in. lg.)	
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set or rubber strips for flexible coupling	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
31139	Turntable Assembly—less spindle	
31128	Washer—"C" washer for top of record post	
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	
	MOTOR ASSEMBLIES Models U-132 and U-134 Only	
31448	Motor—105-125 volts, 25 cycle (M2)	
31163	Motor—105-125 volts, 50-60 cycle (M2)	
31157	Motor—105-125 volts, 60 cycle (M2)	
30870	Plug—2-contact male plug for motor power cable	
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25-cycle models only	
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50- or 60-cycle models only	
14206	Switch—Motor toggle switch (S102)	
	PICKUP AND ARM ASSEMBLIES Models U-132 and U-134 Only	
31162	Cable—Pickup arm lift cable clips	
32632	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	
	SPEAKER ASSEMBLIES Speaker RL76B-1	
14604	Coil—Hum neutralizing coil (L37)	
31723	Coil—Speaker field coil (L36)	
31721	Cone—Speaker cone and voice coil (L38)	
5039	Plug—4-contact male plug for speaker	
14358	Screw—Cap screw and washer to hold core	
31718	Speaker complete	
	MISCELLANEOUS ASSEMBLIES	
31358	Button—Station selector push-button	
13103	Cap—Pilot lamp cap (bullseye)—Models U-132 and U-134 only	
31286	Carriage—Indicator pointer carriage and clip—Model HF-6 only	
31456	Cover—Eight protective covers for push-button markers	
31540	Cushion—Chassis mounting cushion and screw assemblies sufficient for one chassis—Models U-132 and U-134 only	
31541	Cushion—Motor plate mounting cushion and clamp assembly sufficient for one instrument—Models U-132 and U-134 only	
31716	Dial—Station selector dial scale and crystal—Model HF-6 only	
31719	Dial—Station selector dial scale and crystal—Models HF-8, U-132 and U-134 only	
31362	Escutcheon—Station selector dial escutcheon only—less dial, and push-buttons—Model HF-6 only	
31561	Escutcheon—Station selector dial escutcheon only—less dial, and push-buttons—Models HF-8, U-132 and U-134 only	
4585	Hinge—One pair cabinet door hinges (1 top, 1 bottom)—Model HF-8 only	
30698	Hinge—Cabinet lid hinge—Models U-132 and U-134 only	
31759	Hinge—Cabinet door hinges (1 upper and 1 lower)—Model U-134 only	
31564	Holder—Needle card holder—Models U-132 and U-134 only	
31717	Indicator—Station selector indicator pointer, carriage, and clip assembly—Models HF-8, U-132 and U-134 only	
31714	Indicator—Station selector indicator pointer—Model HF-6 only	
31355	Knob—Volume control, tone control, range switch, or fidelity switch knob	
31713	Knob—Station selector knob	
11891	Lamp—Pilot or compartment lamp—Models U-132 and U-134 only	
31458	Marker—"Dial Tuning" push-button marker	
31457	Marker—"Victrola" push-button marker	
31589	Marker—Station call letter markers (1 set)	
31760	Screen—Compartment lamp screen—Models U-132 and U-134 only	
31285	Screen—Dial color screen and light diffuser—Model HF-6 only	
31559	Screen—Dial color screen and light diffuser—Models HF-8, U-132 and U-134 only	
12993	Screw—No. 8-32 x ⅜-in. headless set screw for knob, Stock No. 31713	
31287	Shaft—Slide shaft for indicator pointer carriage	
31364	Socket—Pilot or compartment lamp socket—Models U-132 and U-134 only	
31558	Spring—Indicator carriage bumper spring	
14270	Spring—Retaining spring for knob, Stock No. 31355	
31478	Support—Cabinet lid support—Models U-132 and U-134 only	
31470	Suspension—Motor board suspension springs, screw, and washer (4 required)—Models U-132 and U-134 only	
	ANTENNA ASSEMBLIES	
31426	Counterpoise Line—Additional length 60-ft. long	
12426	Insulator—Strain and counterpoise insulator	
9816	Transmission Line—Additional length 60-ft. long	

RCA Victor

MODEL 5Q1

FORMERLY MODEL 95FT

Five-Tube, Three-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES	
"Standard Broadcast" (A)	540- 1,720 kc
"Medium Wave" (B)	2,300- 7,000 kc
"Short Wave" (C)	7,000-22,000 kc

R-F ALIGNMENT FREQUENCIES	
"Medium Wave" (B)	6,000 kc (osc., ant.)
"Short Wave" (C)	20,000 kc (osc.)
"Standard Broadcast" (A)	600 kc (osc.), 1,500 kc (osc.)

Intermediate Frequency .... 455 kc

RADIOTRON COMPLEMENT	
(1) RCA-6A8	First Detector-Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7-G	Second Detector—A.V.C.—Audio Voltage Amplifier
(4) RCA-6F6-G	Audio Power Amplifier
(5) RCA-5Y3-G	Full-Wave Rectifier

Pilot Lamps (2) .... Mazda No. 46, 6.3 volts, 0.25 amp.

POWER SUPPLY RATINGS	
Rating A	105-125 volts, 50-60 cycles, 75 watts
Rating B	105-125 volts, 25-60 cycles, 75 watts
Rating C	105-125/200-250 volts, 50-60 cycles, 75 watts

POWER OUTPUT	
Undistorted	2.2 watts
Maximum	4.5 watts

LOUDSPEAKER		
Type		6-inch electrodynamic
V. C. Impedance	84091-1 84001-3	2.6 ohms at 400 cycles
	84091-2 84001-6	4.7 ohms at 400 cycles

Mechanical Specifications

Height	16 inches
Width	11⅜ inches
Depth	10 inches
Net Weight	18 pounds
Shipping Weight	22 pounds
Chassis Base Dimensions	9½ inches x 7½ inches x 2½ inches
Over-all Chassis Height	7⅛ inches
Operating Controls	(1) Power Switch—Tone; (2) Tuning (large knob); Range Selector (small knob, left to right "A," "B," "C"); (3) Volume
Tuning Drive Ratio	20 to 1

General Description and Service Data

This receiver uses a three-band superheterodyne circuit in a table-type cabinet. Features of design include magnetite-core adjusted i-f transformers and low frequency "A" oscillator tracking; automatic volume control; phonograph terminal board; aural-compensated volume control; continuously variable tone control; dustproof electrodynamic loudspeaker; and an edge-illuminated, straight-line dial.

Loudspeaker.—Centering of the loudspeaker voice coil is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This

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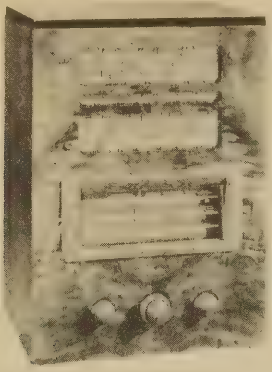
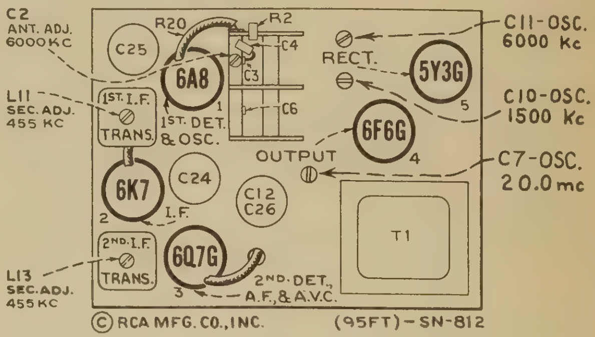
may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.



Precautionary Lead Dress.—(1) Keep leads from C1 as short as possible. (2) Dress yellow and green leads from range selector to oscillator coil between front apron and range selector. (3) Dress blue lead from oscillator coil to oscillator plate away from other parts. Maintain original length and size of the following: (4) bus lead from antenna coil L1 to range selector and (5) lead from oscillator coil to chassis.

Phonograph Attachment.—A terminal board is provided for connecting a phonograph into the audio amplifying circuit. RCA Victor Models R-93, R-93-A, R-93-B, R-93-C, R-93-2, or R-94 Record Players should be connected as follows: Open link between terminals 1 and 2 on terminal board. Connect yellow wire in Radio-Record switch cable to terminal 1, green to terminal 2, and shield extension to terminal 3. Tape unused red and blue leads separately. Connect a 2-conductor twisted cable between the Record Player binding posts and the screw terminals on Radio-Record switch.



L8, 600 kc osc. adjustment is accessible through hole in rear apron

Figure 1—Radiotron, Component Part, and Trimmer Locations

Alignment Procedure

With the gang tuning-condenser plates in full-mesh position, adjust the pointer to the low-frequency (end) calibration mark on the dial scale. The pointer is soldered in place on the drive cable.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 4.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 3. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver "G" (ground) terminal for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

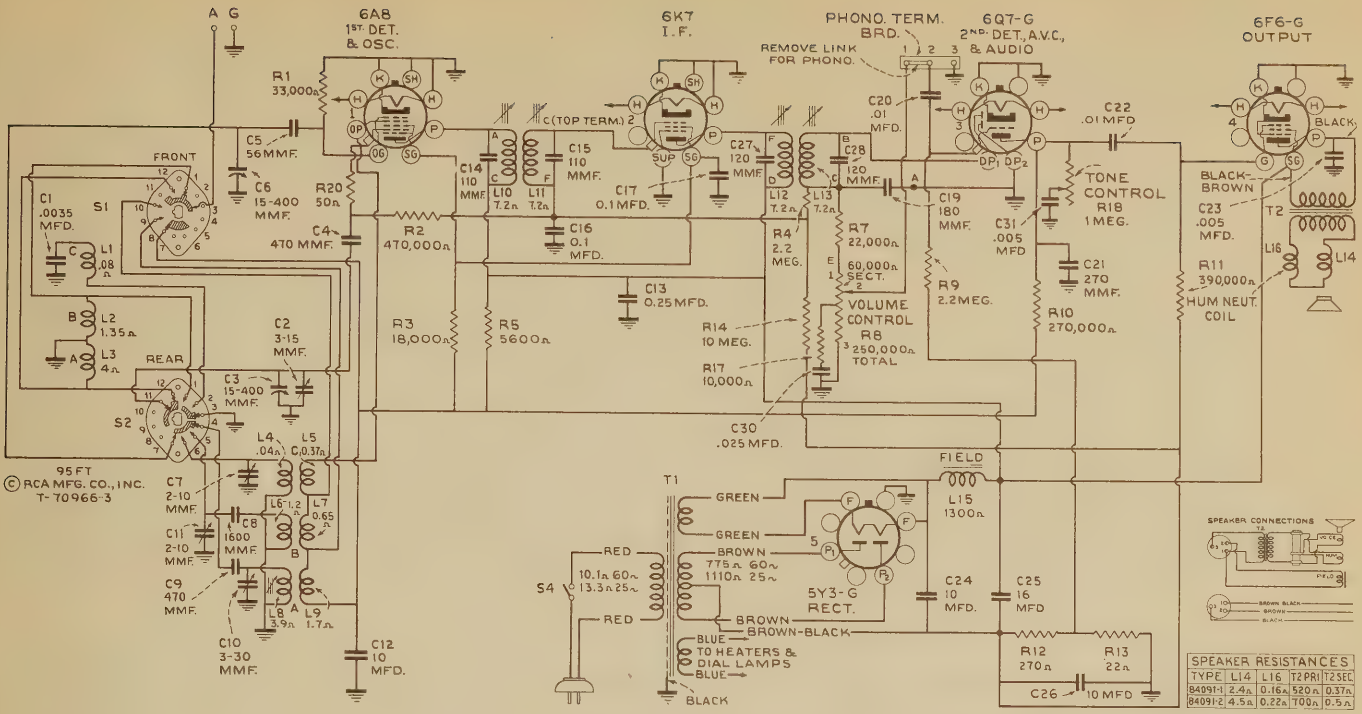
Order of Alignment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting					
1	6K7 I-F Grid Cap	.001 Mfd.	455 kc	"A" Left	No Signal 550-750 kc	2nd I-F Trans.	L12 and L13	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	1st I-F Trans.	L10 and L11	Max. (peak)
3	Ant. Term.	300 Ohms	6,000 kc	"B" Center	6,000 kc	"B" Osc.	C11	Max. (peak)*
4	Ant. Term.	300 Ohms	6,000 kc	"B"	6,000 kc	"B" Ant.	C2	Max. (peak)†
5	Ant. Term.	300 Ohms	20,000 kc	"C" Right	20,000 kc	"C" Osc.	C7	Max. (peak)‡
6	Ant. Term.	200 Mmfd.	600 kc	"A" Left	600 kc	"A" L-F Osc.	L8	Max. (peak)
7	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)
8	Ant. Term.	200 Mmfd.	600 kc	"A"	600 kc	"A" L-F Osc.	L8	Max. (peak)
9	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)

* Use minimum capacity peak if two peaks can be obtained.

† After this adjustment, check for image signal by shifting receiver dial to 5.09 mc.

‡ Use maximum capacity peak if two peaks can be obtained. After this adjustment, check for image signal by shifting receiver dial to 20.91 mc.

Note that the heterodyne oscillator tracks above the signal frequency on bands "A" and "B," and below the signal frequency on band "C."



SPEAKER RESISTANCES				
TYPE	L14	L16	T2 PRI	T2 SEC
84091-1	2.4Ω	0.16Ω	520Ω	0.37Ω
84091-2	4.5Ω	0.22Ω	700Ω	0.5Ω

Figure 2—Schematic Circuit Diagram

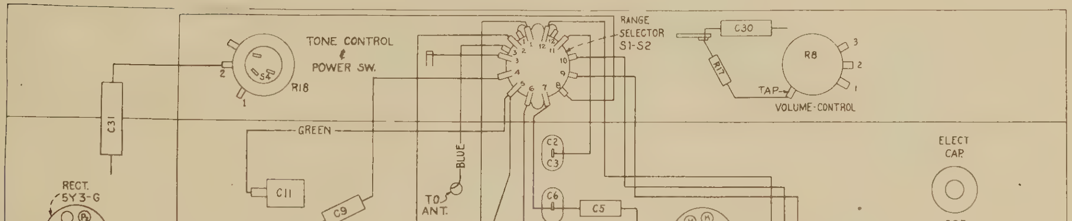


Figure 3—Component Part Location and R-F Wiring Diagram

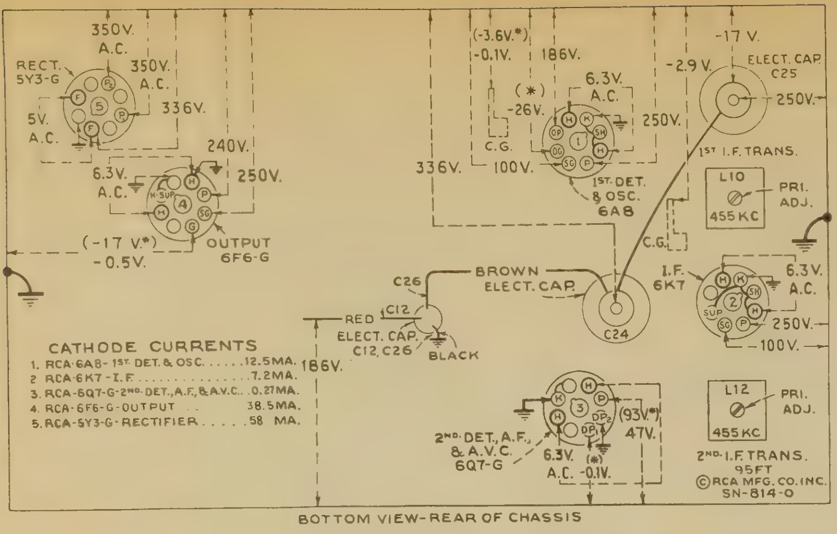
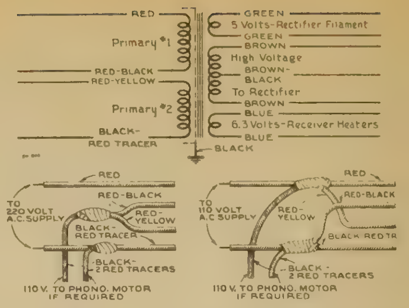


Figure 4—Radiotron Socket Voltages and Trimmer Locations



Schematic and primary lead connections for 110-220 volt power transformer (Stock No. 30607). Resistance of each primary winding, 10 ohms: High-voltage secondary winding, 386 ohms total.

* **Note:** Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14380	Arm—Hum and arm for operating band indicator shutter—fastens on range switch shaft	
14352	Belt—Station selector drive belt	
13216	Board—Antenna and ground terminal board	
12717	Board—Phonograph terminal board	
12607	Cap—Top shield cap for first i-f transformer	
12581	Cap—Top shield cap for second i-f transformer	
11350	Cap—Grid contact cap	
12723	Capacitor—56 mmfd. (C5)	
14262	Capacitor—110 mmfd. (C14, C15)	
12404	Capacitor—120 mmfd. (C27, C28)	
12406	Capacitor—180 mmfd. (C19)	
12488	Capacitor—270 mmfd. (C21)	
30433	Capacitor—470 mmfd. (C4, C9)	
30592	Capacitor—1,600 mmfd. (C8)	
30303	Capacitor—.0035 mfd. (C1)	
4870	Capacitor—.025 mfd. (C30)	
4838	Capacitor—.005 mfd. (C23, C31)	
14393	Capacitor—.01 mfd. (C20, C22)	
4839	Capacitor—0.1 mfd. (C16, C17)	
12484	Capacitor—0.25 mfd. (C13)	
11203	Capacitor—10 mfd.	
30577	Capacitor Pack—Comprising two sections each 10 mfd.	
5212	Capacitor—16 mfd. (C25)	
4358	Clamp—Mounting clamp for capacitor pack Stock No. 30577	
30578	Coil—Antenna coil (L1, L2, L3)	
30579	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9)	
30573	Condenser—2-gang variable tuning condenser (C2, C3, C6)	
30580	Condenser—3-gang mica trimmer—two sections each 2-10 mmfd., one section 3-30 mmfd. (C7, C10, C11)	
30586	Cord—Station-selector indicator pointer cord	
12800	Core—Adjustable core and stud for oscillator coil	
12006	Core—Adjustable core and stud for i-f transformer	
30589	Dial—Station-selector dial scale	
30581	Disc—Band indicator disc with celluloid window	
30572	Drive—Vernier drive shaft and pinion gear for variable condenser	
30584	Drum—Station-selector drive-cord drum with set screws	
30583	Indicator—Station-selector indicator pointer and holder assembly	
5226	Lamp—Dial lamp	
30587	Pulley—Drive-belt pulley for condenser shaft	
14636	Pulley—Drive-belt idler pulley	
14525	Resistor—22 ohms, ¼ watt (R13)	
14653	Resistor—50 ohms, flexible type, ½ watt (R20)	
13819	Resistor—270 ohms, wire wound, 1.1 watt (R12)	
11298	Resistor—5,600 ohms, 1 watt (R5)	
14559	Resistor—10,000 ohms, ¼ watt (R17)	
30151	Resistor—18,000 ohms, 1 watt (R3)	
14284	Resistor—22,000 ohms, 1/10 watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R1)	
12199	Resistor—270,000 ohms, ¼ watt (R10)	
13005	Resistor—390,000 ohms, 1/10 watt (R11)	
11452	Resistor—470,000 ohms, 1/10 watt (R2)	
12679	Resistor—2.2 meg., ¼ watt (R4, R9)	
13601	Resistor—10 meg., ¼ watt (R14)	
14887	Retainer—Band indicator disc retainer	
14343	Ring—Retaining ring for range switch shaft	
14350	Screw—No. 8-32 x 3/16 in. square head set screw for drum Stock No. 30584, arm Stock No. 14380, and pulley Stock No. 30587	
14340	Shaft—Drive pulley and knob shaft—fastens on range switch shaft	
12008	Shield—I-f transformer shield can	
11196	Socket—8-contact Radiotron socket	
14114	Socket—Dial lamp socket	
12007	Spring—Retaining spring for core Stock No. 12006	
30585	Spring—Tension spring for pointer cord	
30588	Spring—Tension spring for idler pulley	
30576	Switch—Range switch (S1, S2)	
30574	Tone Control and power switch (R18, S4)	
14376	Transformer—First i-f transformer (L10, L11, C14, C15)	
14308	Transformer—Second i-f transformer (L12, L13, C19, C27, C28, R7)	
30571	Transformer—Power transformer, 105-125 volts, 25-60 cycles (T1)	
30607	Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycles (T1)	
30575	Volume Control (R8)	
	REPRODUCER ASSEMBLIES	
13677	Cone—Reproducer cone and dust cap (for speaker marked 84091-1 or 84001-3) (L14)	
14934	Cone—Reproducer cone and dust cap (for speaker marked 84091-2 or 84001-6) (L14).	
14613	Reproducer complete—(marked 84001-3 or 6 but interchangeable with speaker marked 84091-1 or 2)	
14615	Transformer—Output transformer (for speaker marked 84091-1 or 84001-3) (T2)	
14935	Transformer—Output transformer (for speaker marked 84091-2 or 84001-6) (T2)	
	MISCELLANEOUS ASSEMBLIES	
30593	Escutcheon—Station selector dial escutcheon and crystal	
11771	Foot—Rubber foot for cabinet	
14359	Knob—Station selector knob	
14269	Knob—Tone-control, volume-control, or range-switch knob	
14267	Screw—Chassis mounting screw and washer assembly	
14270	Spring—Retaining spring for knob Stock No. 14269	
4982	Spring—Retaining spring for knob Stock No. 14359	

RCA Victor

MODEL 5Q2

Chassis No. RC-325-C

Five-Tube, Three-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,550 kc (555-193 m)
"Medium Wave" (B)	2.3-7.0 mc (130-42.8 m)
"Short Wave" (C)	7.0-22.0 mc (42.8-13.6 m)
Intermediate Frequency	455 kc

Radiotron Complement

(1) RCA-6A8-G	First Detector—Oscillator
(2) RCA-6K7	Intermediate Amplifier
(3) RCA-6Q7-G	Second Detector, A.V.C., and A-F Amp.
(4) RCA-6F6-G	Power Output
(5) RCA-5Y3-G	Full-Wave Rectifier

Pilot Lamps (2)	Mazda 44, 6.3 volts, 0.25 amp.

Power Output Rating

Undistorted	2.5 watts
Maximum	4.5 watts

Loudspeaker (RL-63F-1)

Type	8-inch Electrodynamic
V.C. Impedance	2.2 ohms at 400 cycles

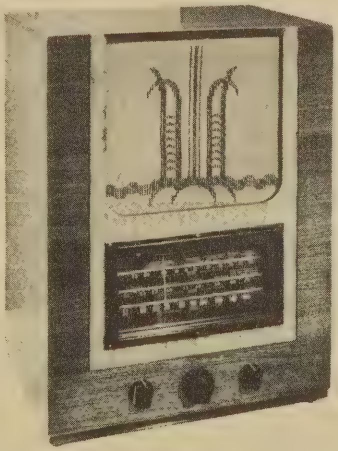
Power Supply Ratings

Rating A	105-125 volts, 50-60 cycles, 75 watts
Rating B	105-125 volts, 25-60 cycles, 75 watts
Rating C	105-125/200-250 volts, 50-60 cycles, 75 watts

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	17⅜	13	9
Chassis Base Dimensions (inches)	2½	9½	7½
Over-all Chassis Height			7 3/16 inches
Weight			Net 21¼ pounds; Shipping 26 pounds
Tuning Drive Ratio			20 to 1

General Description



Model 5Q2 is a three-band table-type superheterodyne receiver. It is designed to cover the standard broadcast range of 540 to 1,550 kilocycles, and the short-wave range from 2.3 to 22 megacycles.

Features of design include: Magnetite-core i-f transformers; magnetite-core "A" band oscillator coil; air-core trimmer capacitors; automatic volume control; aural-compensated volume control; continuously-variable high-frequency tone control; straight-line dial; band indicator in dial; terminals for Victrola Attachment; dust-proof electrodynamic loudspeaker.

First Edition

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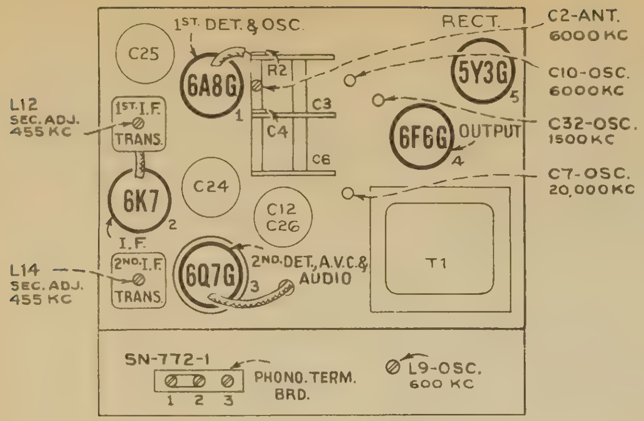
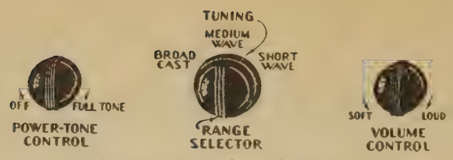
Printed in U. S. A.





Above—Location of Controls

At Left—Tube and Trimmer Locations

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L13 and L14 (2nd I-F Trans.)
2	6A8-G det. grid cap, in series with .01 mfd.	455 kc		L11 and L12 (1st I-F Trans.)
3	Antenna Terminal in series with 300 ohms	6 mc	6 mc "B" band	C10 (osc.) * C2 (ant.) †
4	Antenna Terminal in series with 300 ohms	20 mc	20 mc "C" band	C7 (osc.) **
5	Antenna Terminal in series with 200 mmf.	600 kc	600 kc "A" band	L9 (osc.)
6	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C32 (osc.) *
7	Repeat steps 5 and 6.			

* Use **minimum** capacity peak if two peaks can be obtained.

† After adjusting C2, check to determine that C10 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C7 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on **"A"** and **"B"** bands, and 455 kc **below** the signal on **"C"** band.

Miscellaneous Service Data

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover by applying acetone sparingly, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

Victrola Attachment.—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment, such as R-93, R-93A, R-93B, R-93C, R-94, R-94-B. A Stock No. 9824 switch is required to change from radio to Victrola. The connections for this switch are as follows:

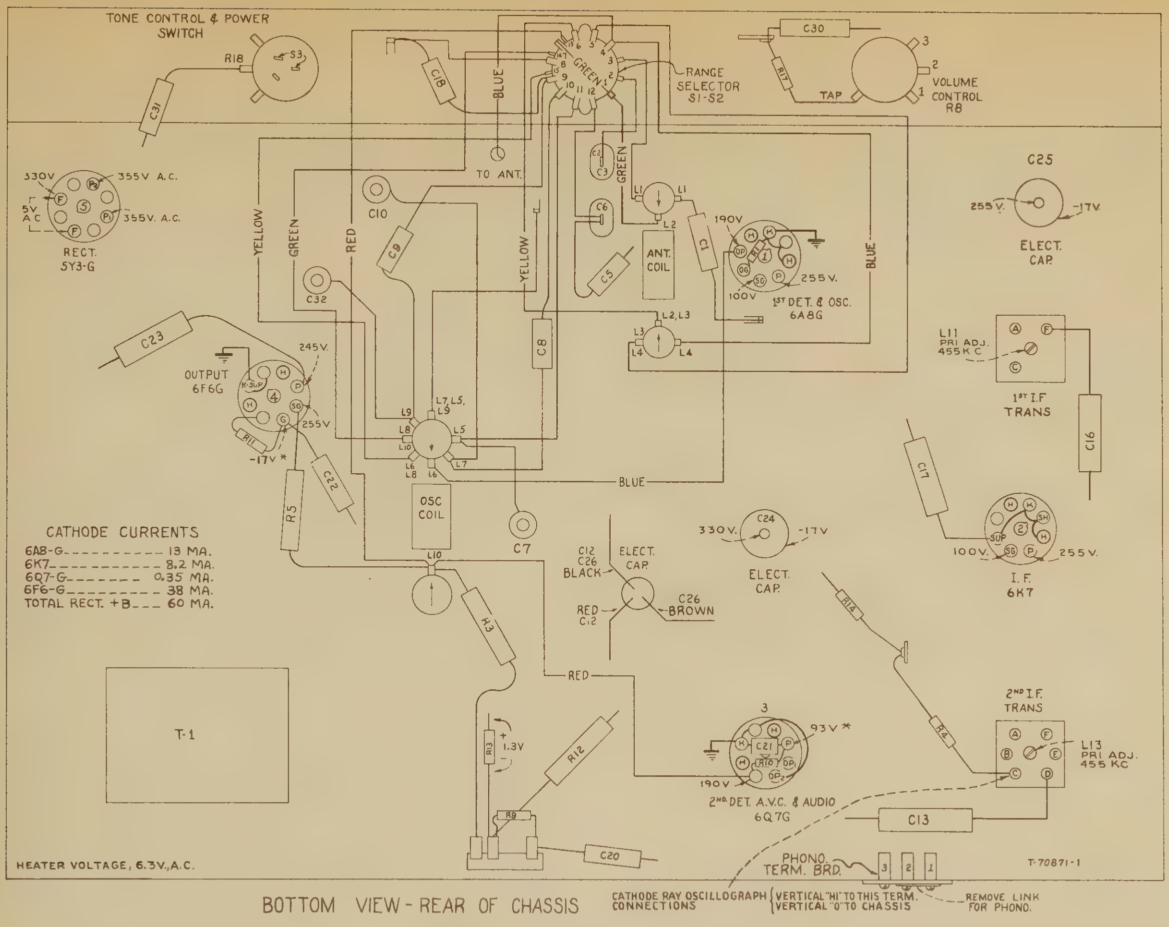
Connect the yellow lead in the switch cable to terminal No. 1.

Connect the green lead in the switch cable to terminal No. 2.

Connect the shielding of the cable to terminal No. 3.

Tape the ends of the blue and the red leads separately.

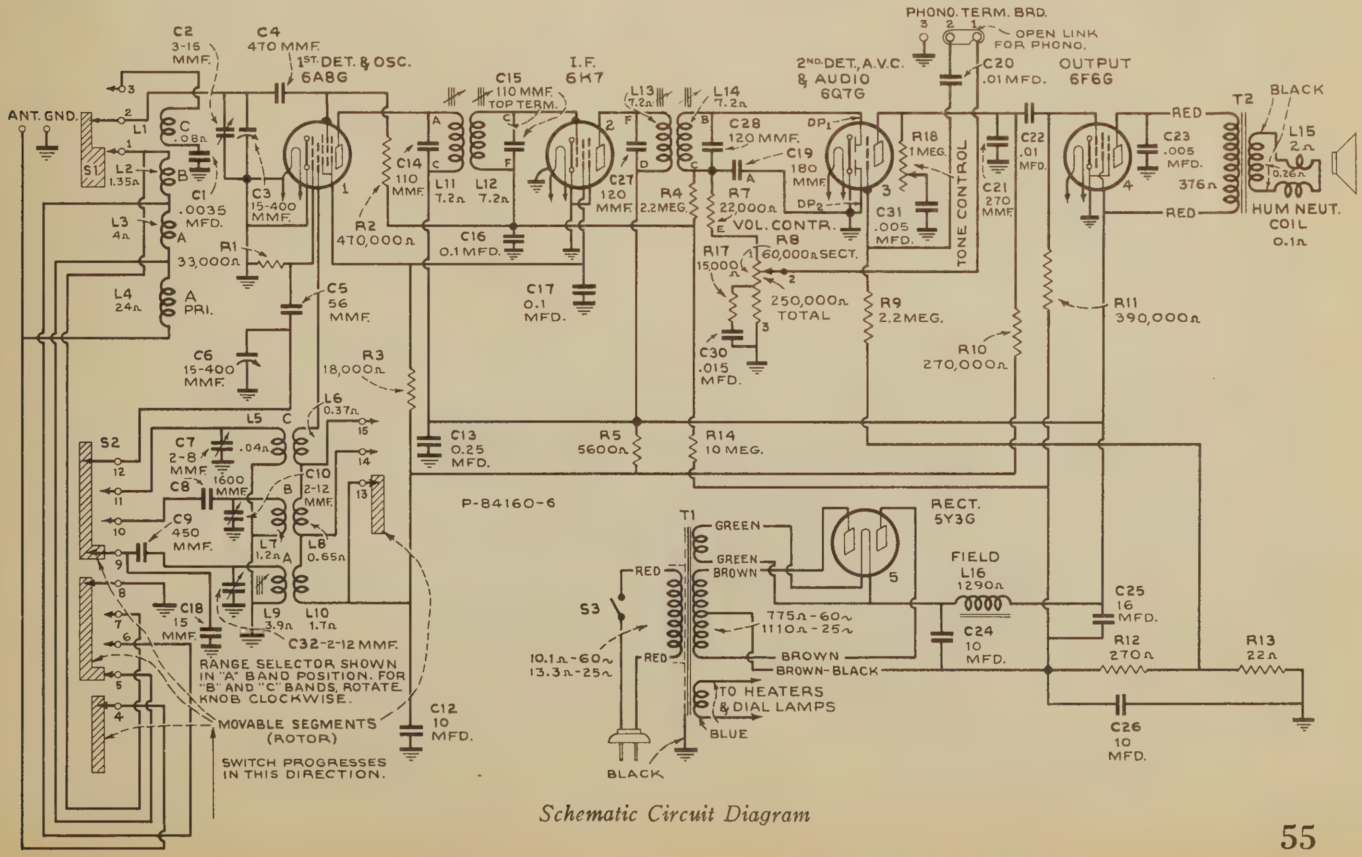
Connect the Victrola Attachment to the two clip-type connectors on the switch.



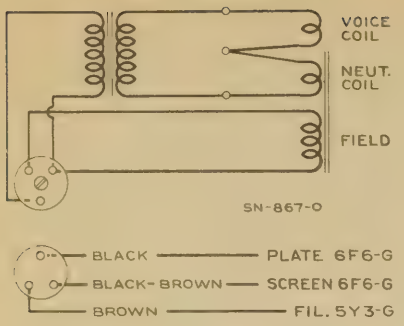
R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 115-volt a-c supply.

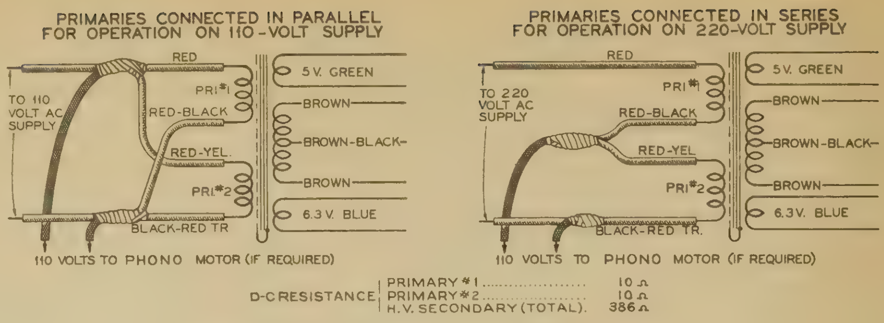
***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Schematic Circuit Diagram



Connections and Colors of Speaker and Cable



Connections of Universal Power Transformer Primary for 220 and 110 Volts

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14380	Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft	
14352	Belt—Station selector drive belt	
13216	Board—Antenna and ground terminal board	
12717	Board—Phonograph terminal board	
12607	Cap—Top shield cap for first i-f transformer	
12581	Cap—Top shield cap for second i-f transformer	
30314	Cap—Grid contact cap	
12807	Capacitor—Adjustable trimmer (short) (C7)	
12714	Capacitor—Adjustable trimmer (medium) (C32, C10)	
12896	Capacitor—15 mmfd. (C18)	
12723	Capacitor—56 mmfd. (C5)	
14262	Capacitor—110 mmfd. (C14, C15)	
12404	Capacitor—120 mmfd. (C27, C28)	
14712	Capacitor—180 mmfd. (C19)	
12488	Capacitor—270 mmfd. (C21)	
12812	Capacitor—450 mmfd. (C9)	
30433	Capacitor—470 mmfd. (C4)	
30592	Capacitor—1,600 mmfd. (C8)	
30303	Capacitor—.0035 mfd. (C1)	
4838	Capacitor—.005 mfd. (C23, C31)	
14393	Capacitor—.01 mfd. (C20, C22)	
11315	Capacitor—.015 mfd. (C30)	
4839	Capacitor—0.1 mfd. (C16, C17)	
12484	Capacitor—0.25 mfd. (C13)	
11203	Capacitor—10 mfd.	
30577	Capacitor Pack—Comprising two sections, each 10 mfd.	
5212	Capacitor—16 mfd. (C25)	
4358	Clamp—Mounting clamp for capacitor pack, Stock No. 30577	
30621	Coil—Antenna coil (L1, L2, L3, L4)	
30579	Coil—Oscillator coil (L5, L6, L7, L8, L9, L10)	
30573	Condenser—2-gang variable tuning condenser (C2, C3, C6)	
30586	Cord—Station selector indicator pointer cord	
12800	Core—Adjustable core and stud for oscillator coil	
12006	Core—Adjustable core and stud for i-f transformers	
31741	Dial—Station selector dial scale (glass)	
30581	Disc—Band indicator disc with celluloid window	
30572	Drive—Vernier drive shaft and pinion gear for variable condenser	
30584	Drum—Station-selector drive-cord drum with set screws	
30583	Indicator—Station-selector indicator pointer and holder assembly	
11891	Lamp—Dial lamp	
14028	Nut—Jamb nut for adjustable capacitor, Stock Nos. 12807 and 12714	
30587	Pulley—Drive-belt pulley for condenser shaft	
14636	Pulley—Drive-belt idler pulley	
14525	Resistor—22 ohms, ¼ watt (R13)	
13819	Resistor—270 ohms, wire-wound, 1.1 watt (R12)	
13714	Resistor—5,600 ohms, 1 watt (R5)	
12695	Resistor—15,000 ohms, ¼ watt (R17)	
30151	Resistor—18,000 ohms, 1 watt (R3)	
14284	Resistor—22,000 ohms, 1/10 watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R1)	
12199	Resistor—270,000 ohms, ¼ watt (R10)	
13005	Resistor—390,000 ohms, 1/10 watt (R11)	
11452	Resistor—470,000 ohms, 1/10 watt (R2)	
12679	Resistor—2.2 meg., ¼ watt (R4, R9)	
13601	Resistor—10 meg., ¼ watt (R14)	
14887	Retainer—Band indicator disc retainer	
14343	Ring—Retaining ring for range switch shaft	
14350	Screw—No. 8-32 x 3/16-inch square-head set screw for drum, Stock No. 30584; arm, Stock No. 14380, and pulley, Stock No. 30587	
14340	Shaft—Drive pulley and knob shaft—fastens on range-switch shaft	
3682	Shield—Radiotron shield	
12008	Shield—I-f transformer shield can	
5119	Socket—3-contact speaker cable socket	
11196	Socket—8-contact tube socket	
14114	Socket—Dial lamp socket	
12007	Spring—Retaining spring for core, Stock No. 12006	
30585	Spring—Tension spring for pointer cord	
30588	Spring—Tension spring for idler pulley	
30620	Switch—Range switch (S1, S2)	
30574	Tone control and power switch (R18, S3)	
14376	Transformer—First i-f transformer (L11, L12, C14, C15)	
14308	Transformer—Second i-f transformer (L13, L14, C19, C27, C28, R7)	
30571	Transformer—Power transformer, 105-125 volts, 25-60 cycles (T1)	
30607	Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycles (T1)	
30575	Volume Controls (R8)	
	SPEAKER ASSEMBLIES (RL-63F-1)	
14356	Board—3-contact speaker terminal board	
13866	Cap—Cone center dust cap	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L17)	
12642	Cone—Speaker cone and dust cap (L15)	
5118	Plug—3-contact male plug for speaker	
14360	Speaker—Complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
14355	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31742	Escutcheon—Dial escutcheon and crystal	
13907	Knob—Tone control, volume control or range switch knob	
31743	Knob—Station selector knob	
14267	Screw—Chassis mounting screw and washer assembly	
11349	Spring—Retaining spring for knob, Stock No. 13907	
4982	Spring—Retaining spring for knob, Stock No. 31743	

RCA Victor

MODEL 5Q4

Chassis No. RC-366

Five-Tube, Four-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

Long Wave ("X" Band)	150-400 kc (2,000-750 m)
Medium Wave ("A" Band)	540-1,650 kc (555-181 m)
Short Wave 1 ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave 2 ("C" Band)	7.0-22.0 mc (42.8-13.6 m)

Intermediate Frequency.......... 455 kc

Radiotron Complement

(1) RCA-6K8	First Detector—Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7-G	2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6K6-G	Power Output
(5) RCA-5Y3-G	Rectifier

Pilot Lamp (1).......... Mazda 44, 6.3 volts, 0.25 amp.

Power Output Rating

Undistorted	2.5 watts
Maximum	4.5 watts

Loudspeaker (RL-63H-3)

Type	8-inch Electrodynamic
V.C. Impedance	2.2 ohms at 400 cycles

Power Supply Ratings

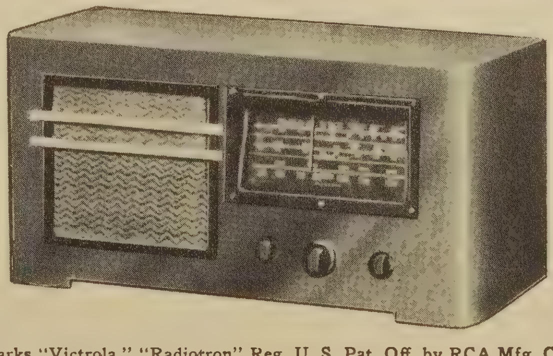
Rating A	105-125 volts, 50-60 cycles, 75 watts
Rating B	105-125 volts, 25-60 cycles, 75 watts
Rating C	105-125/200-250 volts, 50-60 cycles, 75 watts

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	10⅝	20⅞	9⅛
Chassis Base Dimensions (inches)	2½	9½	7

Over-all Chassis Height	7⅛ inches
Weight	Net 20¾ pounds
Tuning Drive Ratio	20 to 1

General Description



Model 5Q4 is a four-band, table-type, superheterodyne receiver. It is designed to cover the long wave range of 150 to 400 kilocycles, the standard broadcast range of 540 to 1,650 kilocycles, and the short wave range of 2.3 to 22 megacycles.

Features of design include: Magnetite-core I-F transformers; magnetite-core oscillator coils for "X" and "A" bands; link-coupled antenna circuits for "X" and "A" bands; automatic volume control; aural-compensated volume control; continuously variable tone control; straight-line dial; vernier tuning; band indicator in dial; terminals for Victrola attachment (record player); dust-proof electrodynamic speaker; wave trap.

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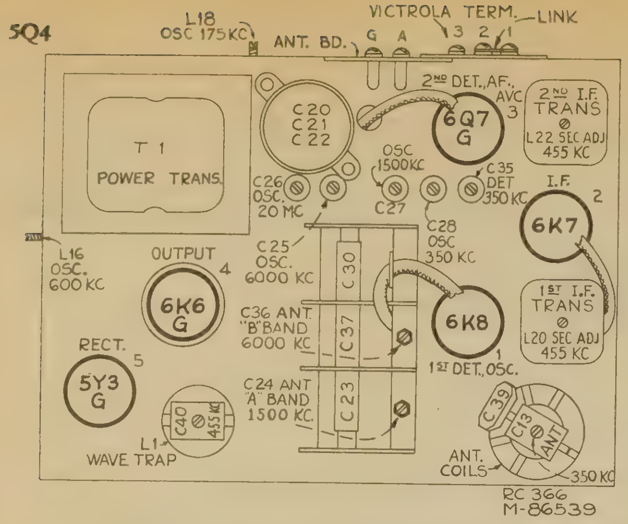
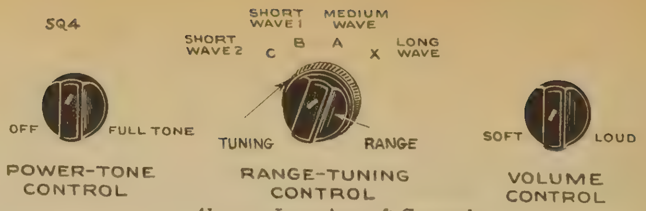




Above—Location of Controls

At Left—Tube and Trimmer Locations

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a.v.c. action.

Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left end of the dial scales. The pointer is soldered to the drive cable.

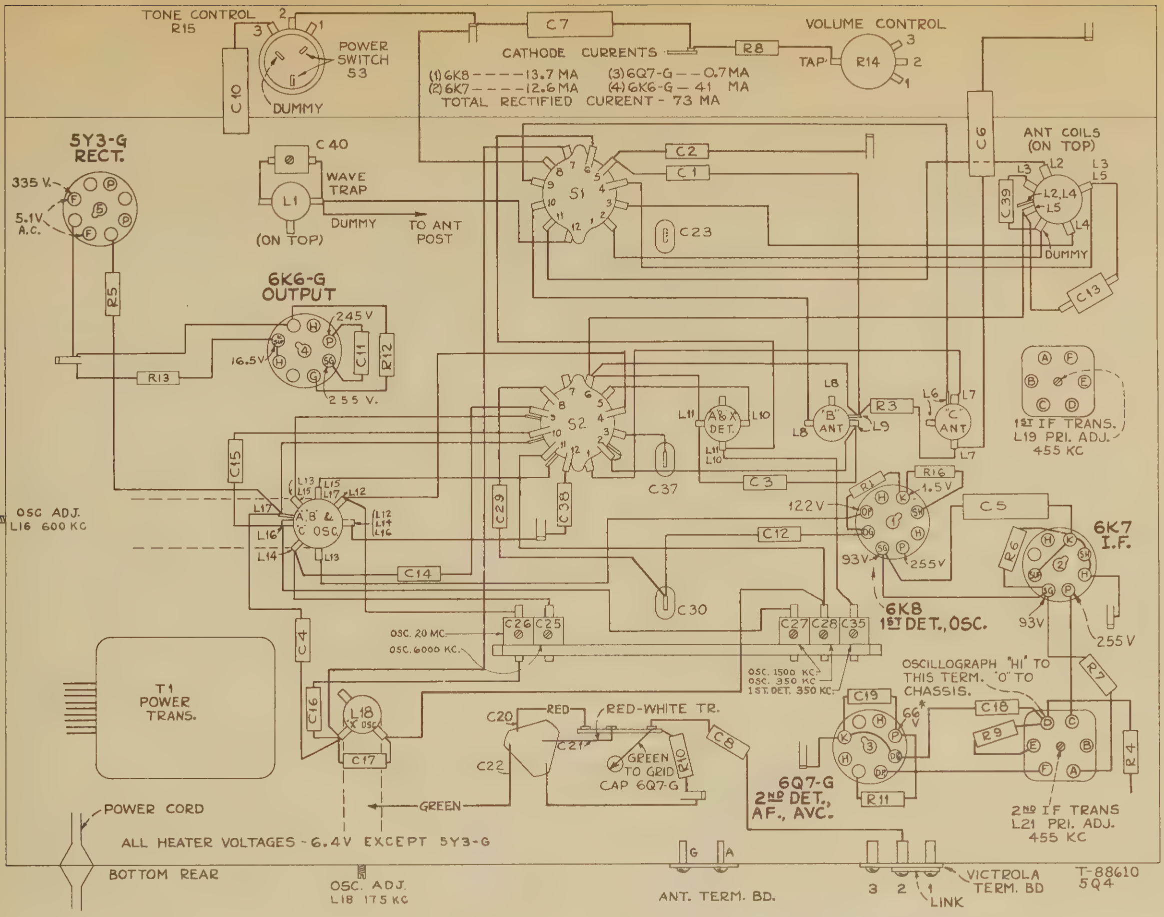
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following to obtain maximum output
1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A" band No Station Point between 550-750 kc	L21 and L22 (2nd I-F transformer)
2	6K8 det. grid cap in series with .01 mfd.	455 kc		L19 and L20 (1st I-F transformer)
3	Antenna Terminal in series with 200 mmfd.	455 kc		C40 (wave trap) MINIMUM OUTPUT
4	Antenna Terminal in series with 300 ohms.	6 mc	6 mc "B" band	C25 (osc.) use MINIMUM capacity peak C36 (antenna) use MAXIMUM capacity peak*
5	Antenna Terminal in series with 300 ohms.	20 mc	20 mc "C" band	C26 (osc.) use MINIMUM capacity peak*
6	Antenna Terminal in series with 200 mmfd.	600 kc	600 kc "A" band	L16 (osc.) Rock Gang
7		1,500 kc	1,500 kc "A" band	C27 (oscillator) C24 (antenna)
8		600 kc	600 kc "A" band	L16 (osc.) Rock Gang
9		175 kc	175 kc "X" band	L18 (osc.) Rock Gang
10		350 kc	350 kc "X" band	C28 (oscillator) C35 (1st det.) C13 (antenna)
11		175 kc	175 kc "X" band	L18 (osc.) Rock Gang

* Check to determine that trimmer has been adjusted to correct peak by tuning receiver approximately 910 kc lower, where a weaker signal should be heard.

Note: Oscillator tracks **above** the signal on all bands.

Precautionary Lead Dress.—

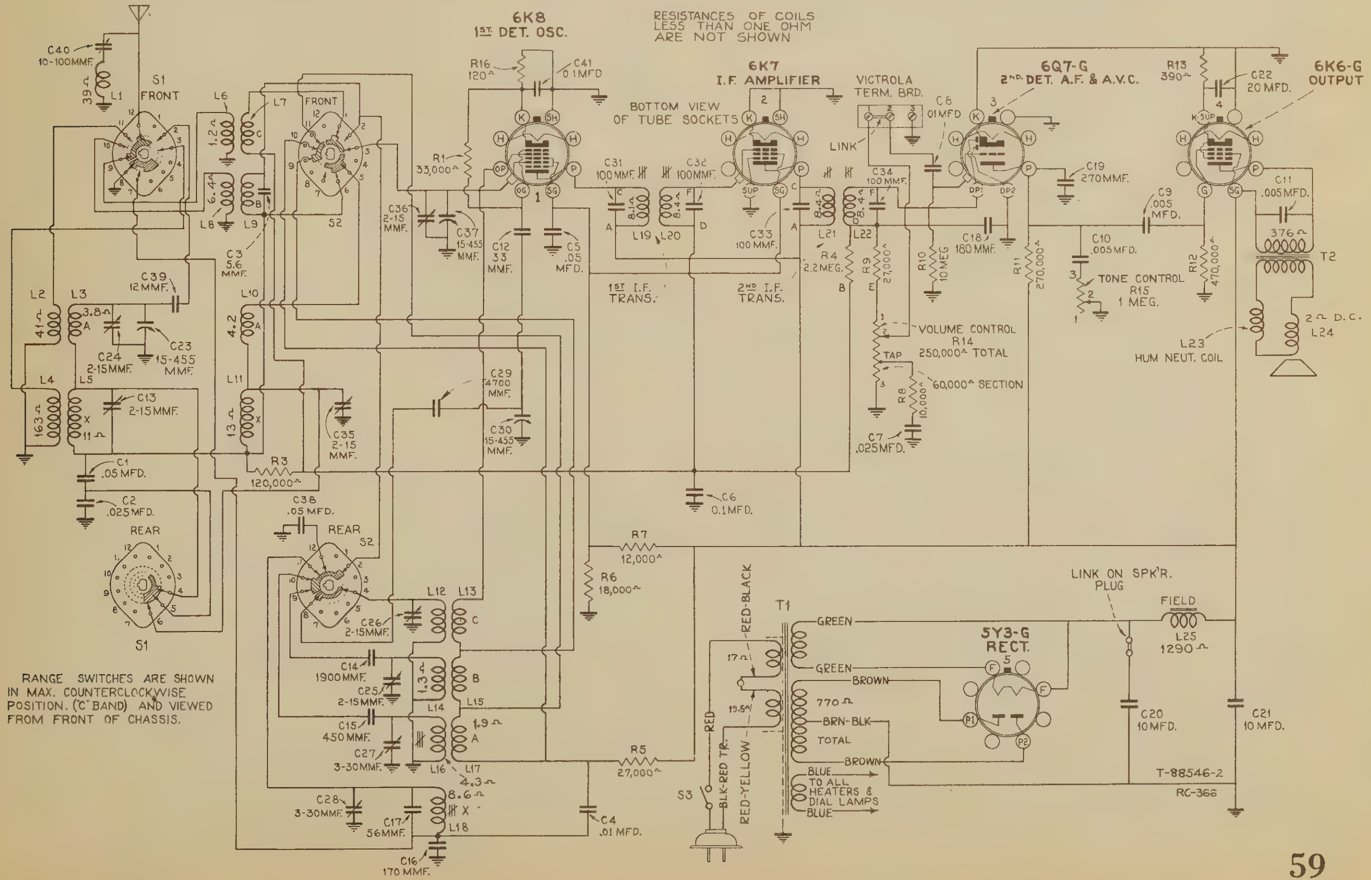
1. Dress blue lead from L7 to terminal 1 on range switch S2 clear of coils and other wires.
2. Dress bus from L12 to contact 4 on range switch S2 clear of other wiring.
3. Dress leads on C29 from gang to range switch short and clear of bus wires.
4. Dress leads from X and A band antenna coil close to underside of chassis.
5. Dress all plus B leads to terminal board under electrolytic between the board and the rear apron.
6. Dress blue lead from 6Q7-G plate to terminal 6 on 6K6-G close to chassis and in front of terminal board (under electrolytic).
7. Dress blue lead from antenna terminal close to top of chassis and clear of gang rotor.
8. Twisted leads from volume control must be dressed clear of self-tapping screws in corners of chassis.

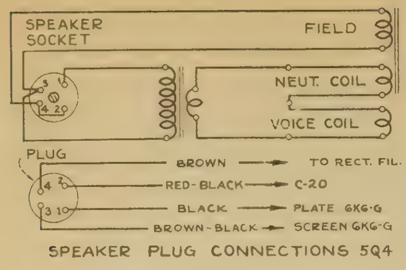


R-F Wiring Diagram and Socket Voltages

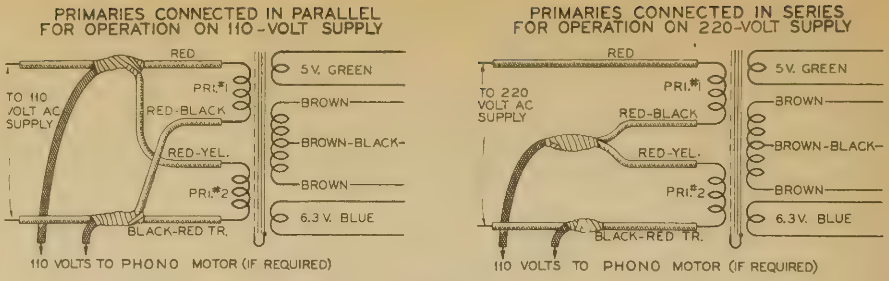
Measurements made to chassis unless otherwise indicated, set tuned to quiet point, volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.





Connections of Loudspeaker and Cable

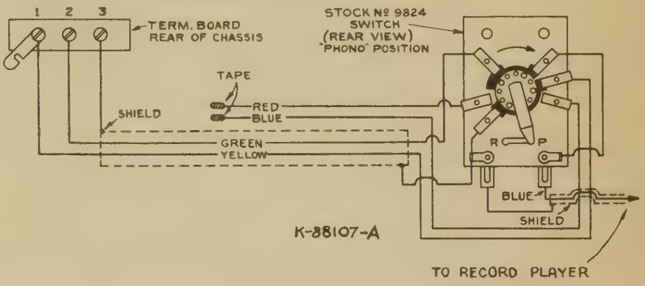


D-C RESISTANCE
PRIMARY #1 .... 17 Ω
PRIMARY #2 .... 19.5 Ω
H.V. SECONDARY (TOTAL) .... 770 Ω

Connections of Universal Power Transformer Primary for 220 and 110 Volts

Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R-93 and R-94 series. A stock No. 9824 switch may be used to change from radio to record player as shown at right.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.


1
2
3
TERM. BOARD REAR OF CHASSIS
STOCK No 9824 SWITCH (REAR VIEW) "PHONO" POSITION
TAPE
SHIELD
RED
BLUE
GREEN
YELLOW
R
P
BLUE
SHIELD
K-88107-A
TO RECORD PLAYER

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES (RC-366)	
14380	Arm—Hub and arm for range switch shaft—less set screws..................................	
14352	Belt—Variable condenser drive belt............	
13216	Board—Antenna and ground terminal board....	
12717	Board—Phonograph input terminal board......	
31949	Capacitor—Trimmer capacitor bank comprising three 2-15 mmfd. and two 3-30 mmfd. sections (C13, C25, C26, C27, C28)............	
12814	Capacitor—5.6 mmfd. (C3)................	
13002	Capacitor—12 mmfd. (C39)................	
12948	Capacitor—33 mmfd. (C12)................	
12723	Capacitor—56 mmfd. (C17)................	
31270	Capacitor—100 mmfd. (C31, C32, C33, C34)..	
31955	Capacitor—170 mmfd. (C16)................	
13003	Capacitor—180 mmfd. (C18)................	
12488	Capacitor—270 mmfd. (C19)................	
31954	Capacitor—450 mmfd. (C15)................	
31953	Capacitor—1900 mmfd. (C14)................	
12897	Capacitor—4700 mfd. (C29)................	
4838	Capacitor—.005 mfd. (C9, C10, C11).........	
14393	Capacitor—.01 mfd. (C4, C8)................	
13606	Capacitor—.025 mfd. (C2)................	
4870	Capacitor—.025 mfd. (C7)................	
13607	Capacitor—.05 mfd. (C1)................	
4886	Capacitor—.05 mfd. (C5)................	
30882	Capacitor—.05 mfd. (C38)................	
4839	Capacitor—0.1 mfd. (C6)................	
30899	Capacitor—0.1 mfd. (C41)................	
31946	Capacitor—Comprising two 10 mfd. and one 20 mfd. sections (C20, C21, C22)..............	
31951	Coil—"A," "B," and "C" bands oscillator coil (L12, L13, L14, L15, L16, L17)..........	
31943	Coil—"B" band antenna coil (L8, L9)........	
31944	Coil—"C" band antenna coil (L6, L7)........	
31948	Coil—"X" band oscillator coil (L18).........	
31947	Coil—"X" and "A" band antenna coil (L2 L3, L4, L5)..............................	
31942	Coil—"X" and "A" bands r-f coil (L10, L11)	
31952	Coil—Wave trap (L1, C40)................	
31939	Condenser—3-gang variable condenser (C23, C24, C30, C36, C37)..............................	
30586	Cord—Indicator drive cord................	
31950	Dial—Dial scale........................	
31940	Drive—Variable condenser pinion gear and shaft	
30584	Drum—Variable condenser drum............	
30583	Indicator—Station selector indicator pointer....	
11891	Lamp—Dial lamp........................	
5040	Plug—4-contact female plug for speaker cable.	
14636	Pulley—Drive belt idler pulley..............	
31373	Pulley—Indicator drive cord pulley..........	
14340	Pulley—Station selector knob shaft and pulley	
30587	Pulley—Variable condenser drive belt pulley..	

STOCK No.	DESCRIPTION	
12071	Resistor—120 ohms, ¼ watt (R16)..........	
31388	Resistor—390 ohms, 1 watt (R13)...........	
14559	Resistor—10,000 ohms, ¼ watt (R8).........	
31389	Resistor—12,000 ohms, 3.5 watts (R7).......	
30151	Resistor—18,000 ohms, 1 watt (R6)..........	
12738	Resistor—27,000 ohms, ¼ watt (R9)..........	
13477	Resistor—27,000 ohms, 1 watt (R5)..........	
12454	Resistor—33,000 ohms, ¼ watt (R1)..........	
13734	Resistor—120,000 ohms, ¼ watt (R3)........	
12199	Resistor—270,000 ohms, ¼ watt (R11).......	
12285	Resistor—470,000 ohms, ¼ watt (R12).......	
12679	Resistor—2.2 meg., ¼ watt (R4)............	
13601	Resistor—10 meg., ¼ watt (R10)...........	
14887	Retainer—Indicator drive cord pulley retainer..	
14343	Retainer—Retaining ring to hold station selector knob shaft and pulley on range switch shaft..	
14350	Screw—No. 8-32 square head set screw for arm Stock No. 14380, pulley Stock No. 30587, and drum Stock No. 30584................	
3682	Shield—Tube shield........................	
31364	Socket—Dial lamp socket..................	
31251	Socket—Tube socket......................	
30588	Spring—Idler pulley spring................	
30585	Spring—Indicator drive cord tension spring....	
31941	Switch—Range switch—less coils (S1, S2)....	
30574	Tone control and power switch (R15, S3).....	
31267	Transformer—First i-f transformer (L19, L20, C31, C32)..............................	
31268	Transformer—Second i-f transformer (L21, L22, C33, C34)..............................	
31945	Transformer—Power transformer 105-120 and 210-240 volts, 50-60 cycles (T1)..........	
30575	Volume Control (R14)....................	
	SPEAKER ASSEMBLIES (RL63H-3)	
31825	Cap—Speaker cone center dust cap...........	
11469	Coil—Hum neutralizing coil (L23)...........	
12012	Coil—Speaker field coil (L25)..............	
31310	Cone—Speaker cone and voice coil (L24)......	
31302	Plug—4-contact male plug for speaker........	
31824	Speaker complete........................	
14355	Transformer—Output transformer (T2).......	
	MISCELLANEOUS ASSEMBLIES	
31742	Escutcheon—Dial escutcheon................	
13907	Knob—Volume control, tone control, or range switch knob..............................	
31743	Knob—Station selector knob................	
4982	Spring—Retaining spring for knob Stock No. 31743	
11349	Spring—Retaining spring for knob Stock No. 31907	

RCA Victor

MODEL 8Q1

Chassis No. RC-337

Eight-Tube, Three-Band, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)	530-1720 kc (566-174 m)
Medium Wave ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)	7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY ... 455 kc

RADIOTRON COMPLEMENT

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6L7	1st-Detector
(3)	RCA-6J7	Oscillator
(4)	RCA-6K7	I-F Amplifier
(5)	RCA-6Q7	2nd-Det., A.V.C., and Audio
(6)	RCA-6F6-G	Power Output
(7)	RCA-6U5	Tuning Indicator
(8)	RCA-5Y3-G.. (In PSU 8A, 8B, 8C AC power supply unit)	Rectifier
(8)	RCA-5W4 (In PSU 8E D-C power supply unit)	Rectifier

Pilot Lamps (2) ... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Undistorted	2.5 watts
Maximum	4.5 watts

LOUDSPEAKER (RL-63H-3)

Type	8-inch Electrodynamic
Voice-coil Impedance at 400 ohms	2.2 ohms

POWER SUPPLY RATINGS

	Volts	Cycles
A-C Ratings		
With PSU 8A Power Supply Unit	105-125	50-60
With PSU 8B Power Supply Unit	105-125	25-60
With PSU 8C Power Supply Unit	105-130, 140-160, 200-225, 225-250	50-60
D-C Ratings		
With PSU 8E Power Supply Unit	105-125, 210-250	D-C

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	19-7/16	15½	10¾
Chassis-Base Dimensions (inches)	2½	12	8

Overall Chassis Height ... 7½ inches
Weight ... 34 lbs. (net)
Tuning Drive Ratio ... 10 to 1, and 50 to 1

General Description

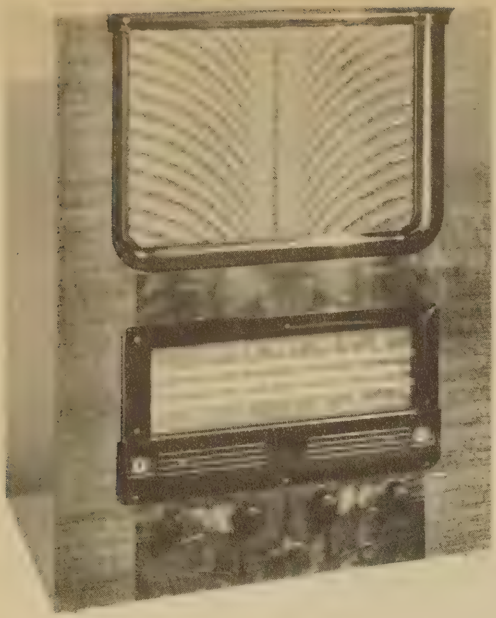
Model 8Q1 is a table-type receiver, with eight-inch electrodynamic loudspeaker, and employs an eight-tube "Magic Brain" superheterodyne circuit.

The power supply is built as a separate plug-in unit. Both a-c and d-c units are available as listed above in the electrical specifications under "Power Supply Ratings".

Features of design include: R-F stage; magnetite-core i-f transformers; magnetite-core "A" band oscillator coil; air-dielectric trimmer capacitors; automatic volume control; aural-compensated manual volume control; continuously-variable high-frequency tone control; straight line dial; two-speed vernier tuning; terminals for Victrola Attachment (record player); band indicator; "Magic Eye" tuning indicator; dust-proof electrodynamic loudspeaker.

Trademarks "Victrola," "Magic Eye," "Magic Brain," "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition
Printed in U.S.A.



Model 8Q1

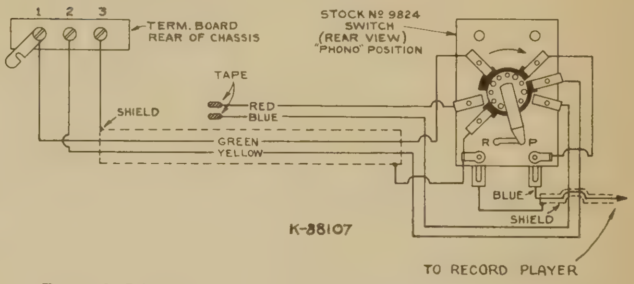
Power Supply Units

The receiver chassis has a seven-prong male connector for connection to the power supply unit. Both A-C and D-C power supply units are available, as listed under "Power Supply Ratings" in the electrical specifications.

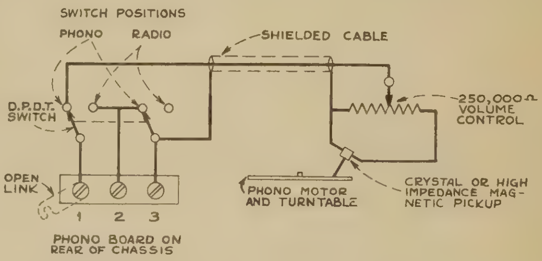
Schematic diagrams and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.

Victrola Attachment (record player). — Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player); such as the RCA R-93 or R-94 series. A Stock No. 9824 switch may be used to change from radio to record player. The connections for this switch are shown below.

In the event that a Stock No. 9824 switch is not available, a double-pole, double-throw toggle switch may be used, connecting it as shown in the second diagram below.

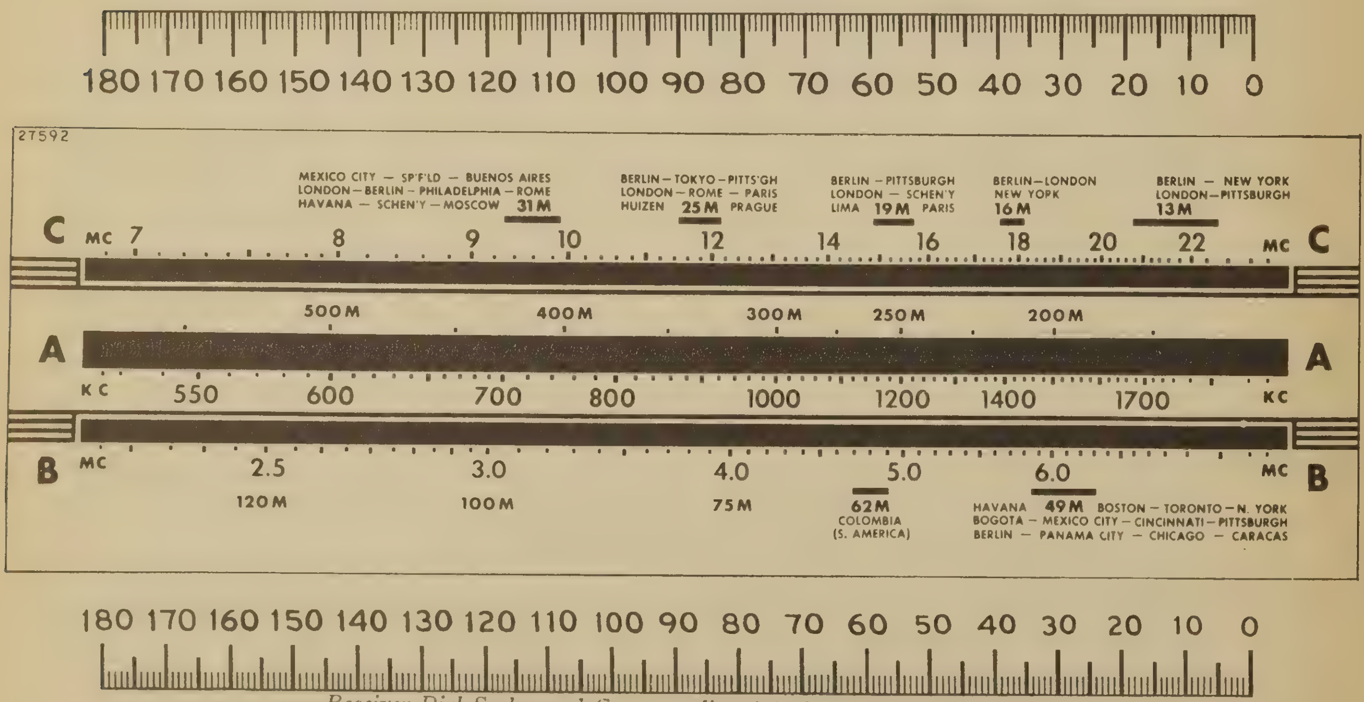

1 2 3
TERM. BOARD REAR OF CHASSIS
STOCK № 9824 SWITCH (REAR VIEW) "PHONO" POSITION
TAPE
RED
BLUE
SHIELD
GREEN
YELLOW
R
P
BLUE
SHIELD
K-88107
TO RECORD PLAYER

Record Player Connections, Using a No. 9824 Switch


SWITCH POSITIONS
PHONO
RADIO
SHIELDED CABLE
D.P.D.T. SWITCH
250,000Ω VOLUME CONTROL
OPEN LINK
1 2 3
PHONO MOTOR AND TURNTABLE
CRYSTAL OR HIGH IMPEDANCE MAGNETIC PICKUP
PHONO BOARD ON REAR OF CHASSIS

Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch

Calibration Scale


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27592
MEXICO CITY — SP'F'LD — BUENOS AIRES
LONDON — BERLIN — PHILADELPHIA — ROME
HAVANA — SCHEN'Y — MOSCOW 31M
BERLIN — TOKYO — PITTS'GH
LONDON — ROME — PARIS
HUIZEN 25M PRAGUE
BERLIN — PITTSBURGH
LONDON — SCHEN'Y
LIMA 19M PARIS
BERLIN — LONDON
NEW YORK
16M
BERLIN — NEW YORK
LONDON — PITTSBURGH
13M
C MC 7 8 9 10 12 14 16 18 20 22 MC C
500M 400M 300M 250M 200M
A
A
KC 550 600 700 800 1000 1200 1400 1700 KC
B MC 2.5 3.0 4.0 5.0 6.0 MC B
120M 100M 75M
62M COLOMBIA (S. AMERICA)
HAVANA 49M BOSTON — TORONTO — N. YORK
BOGOTA — MEXICO CITY — CINCINNATI — PITTSBURGH
BERLIN — PANAMA CITY — CHICAGO — CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 31° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

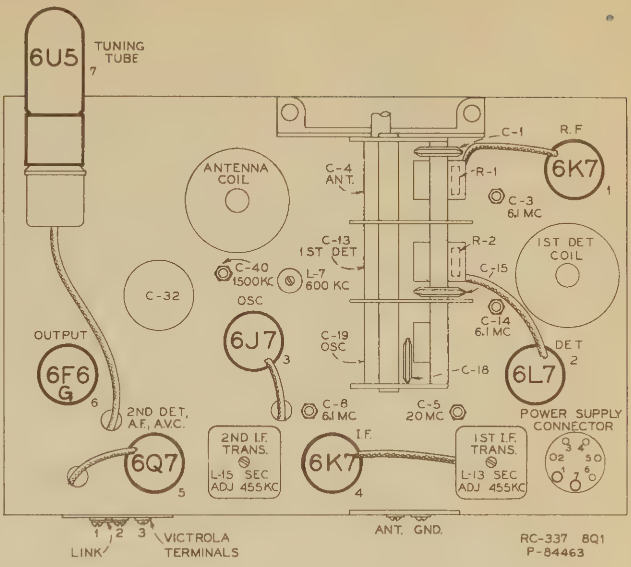
Calibration Scale on Indicator-Drive-Cord drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

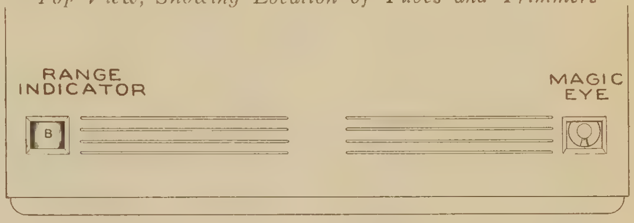
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial-scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



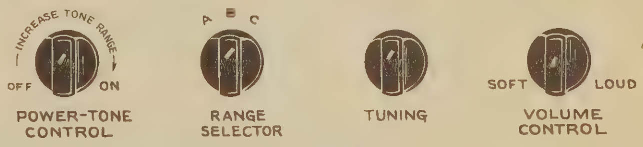
Top View, Showing Location of Tubes and Trimmers



8Q1

At Right—*Location of Controls*

To turn on the set, turn the power-tone control fully clockwise, past the snap of the switch. This is the full-range tone position. To switch off the set, turn this knob fully counter-clockwise.



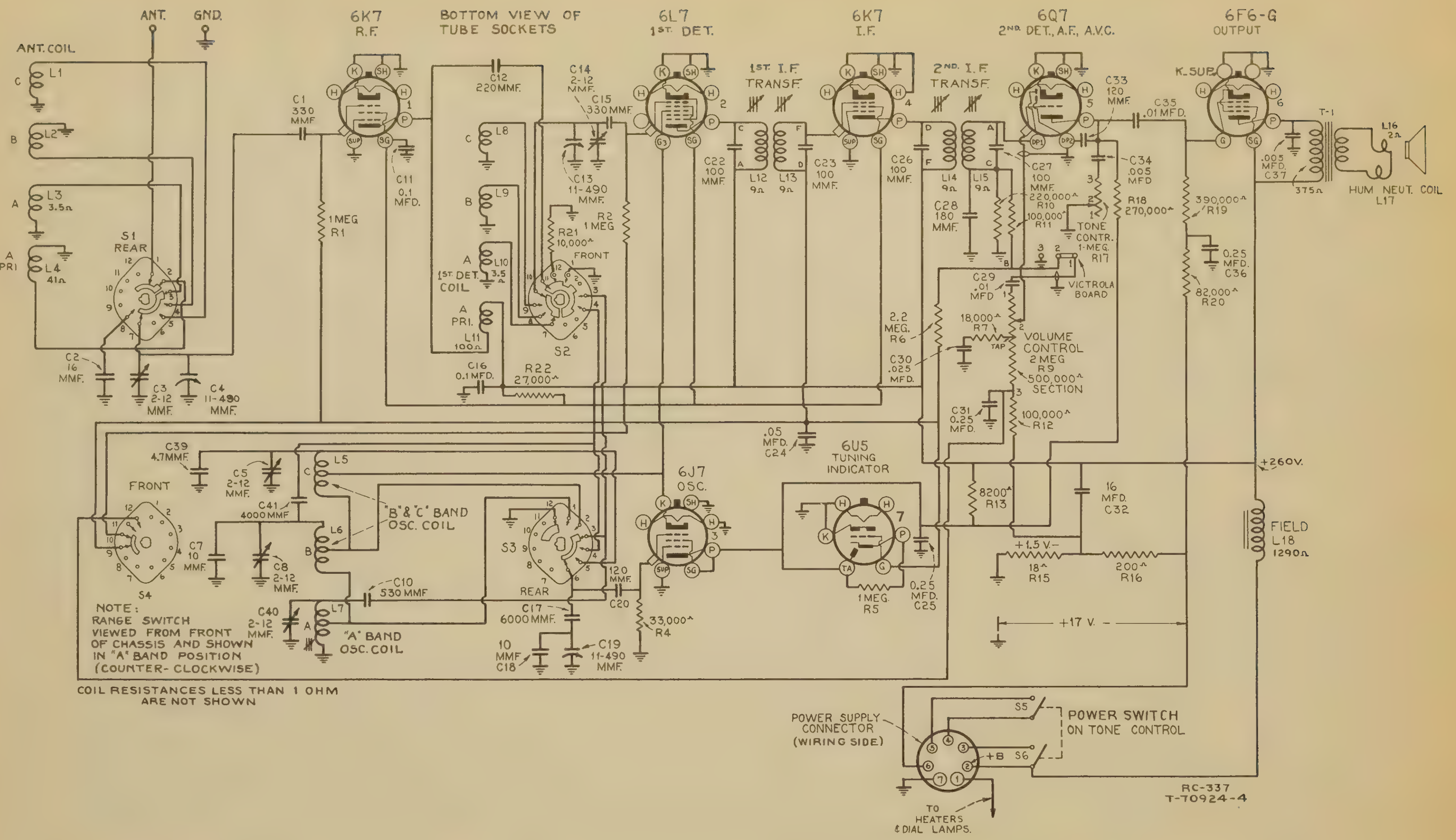
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"C" band, Quiet Point.	L14 and L15 (2nd I-F Trans.)
2	6L7 1st-Det. grid cap, in series with .01 mfd.			L12 and L13 (1st I-F Trans.)
3	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C8 (osc.)* C14 (det.)** C3 (ant.)
3A	Check to determine that C8 has been adjusted to the correct peak by turning radio to 5.19 mc (50°) where a weaker signal should be received.			
4	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C5 (osc.)*
4A	Check to determine that C5 has been adjusted to the correct peak by turning radio to 19.09 mc (29.5°) where a weaker signal should be received.			
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C40 (osc.)
6	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L7 (osc.)†
7	Repeat Step No. 5			

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.

** Rock gang condenser slightly while peaking C14, and use **maximum** capacity peak if two peaks can be obtained.

† Rock gang condenser slightly while peaking L7 for maximum output.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

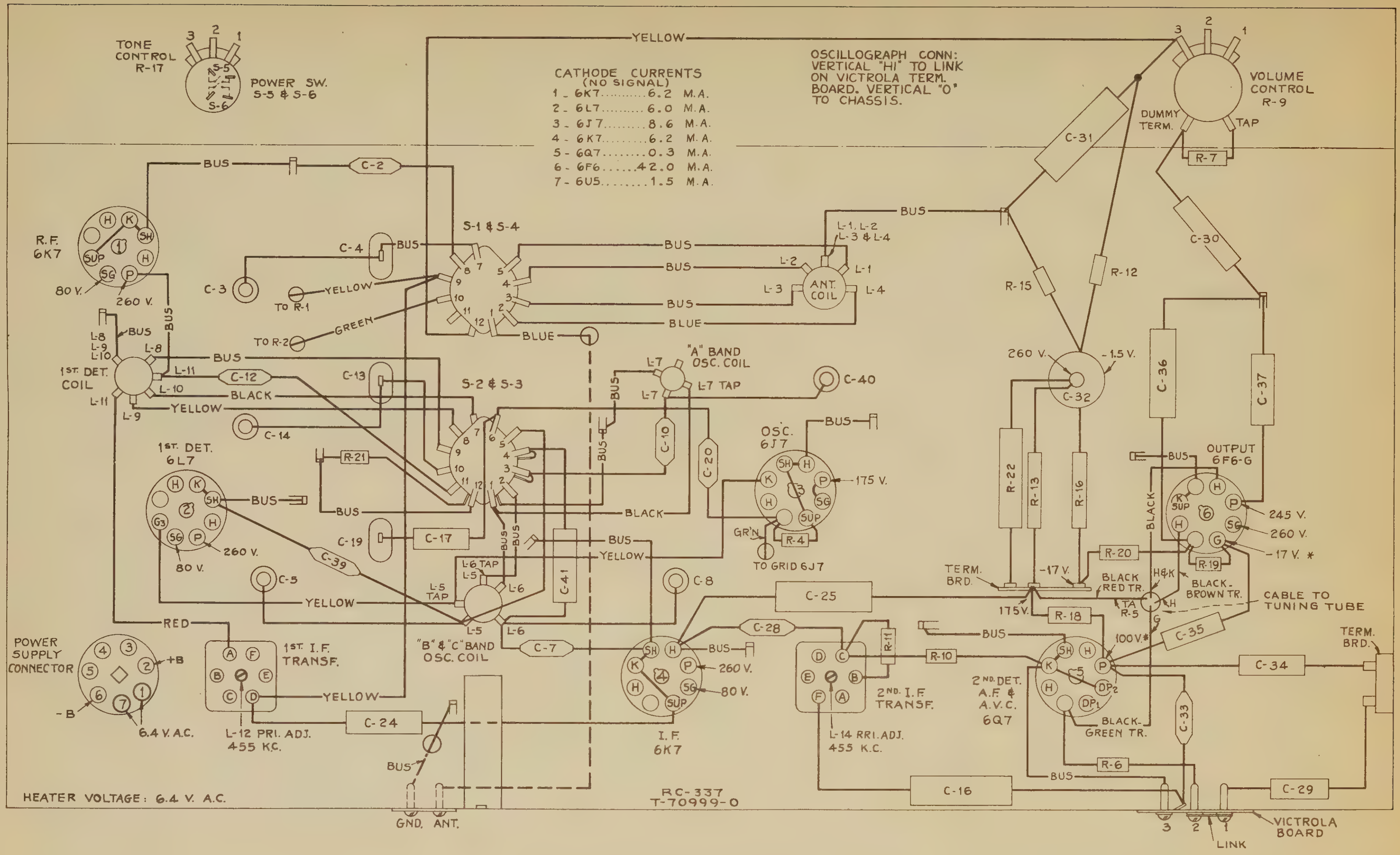


Schematic Circuit Diagram of the Receiver Chassis

NOTE: The power supply units (PSU 8A, 8B, 8C, and 8E) for this receiver are described in separate service data sheets.

Precautionary Lead Dress.—

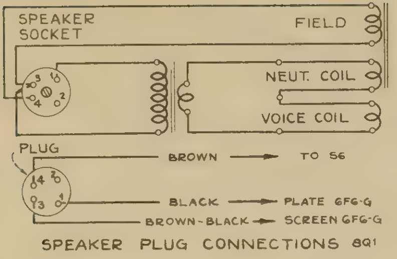
1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.



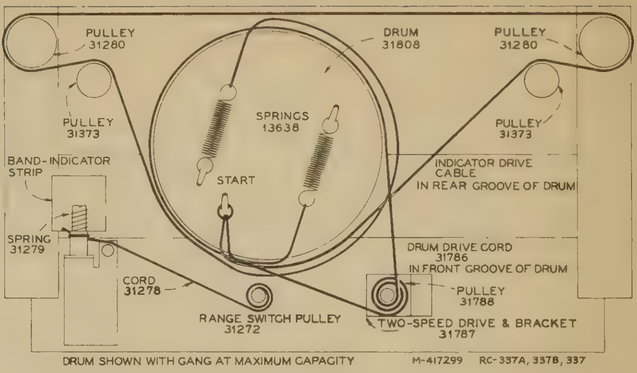
R-F Wiring Diagram and Socket Voltages

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.



Connections of Loudspeaker and Cable


PULLEY 31280
DRUM 31808
PULLEY 31280
PULLEY 31373
SPRINGS 13638
PULLEY 31373
BAND-INDICATOR STRIP
START
INDICATOR DRIVE CABLE IN REAR GROOVE OF DRUM
SPRING 31279
DRUM DRIVE CORD 31786 IN FRONT GROOVE OF DRUM
CORD 31278
PULLEY 31788
RANGE SWITCH PULLEY 31272
TWO-SPEED DRIVE & BRACKET 31787
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY
M-417299 RC-337A, 337B, 337

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES (RC337)	
13216	Board—Antenna and ground terminal board	
12717	Board—Phonograph input terminal board	
31303	Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord	
31785	Cable—Indicator pointer drive cable	
30766	Cap—Rubber cap for Magic Eye	
12714	Capacitor—Trimmer 2-12 mmfd. (C3, C5, C8, C14, C40)	
14392	Capacitor—4.7 mmfd. (C39)	
13200	Capacitor—10 mmfd. (C7, C18)	
31791	Capacitor—16 mmfd. (C2)	
31270	Capacitor—100 mmfd. (C22, C23, C26, C27)	
12724	Capacitor—120 mmfd. (C20, C33)	
13003	Capacitor—180 mmfd. (C28)	
12694	Capacitor—220 mmfd. (C12)	
12952	Capacitor—330 mmfd. (C1, C15)	
31790	Capacitor—530 mmfd. (C10)	
31792	Capacitor—4,000 mmfd. (C41)	
31405	Capacitor—6,000 mmfd. (C17)	
4838	Capacitor—.005 mfd. (C34, C37)	
14393	Capacitor—.01 mfd. (C29, C35)	
4870	Capacitor—.025 mfd. (C30)	
4886	Capacitor—.05 mfd. (C24)	
4839	Capacitor—0.1 mfd. (C11, C16)	
12484	Capacitor—0.25 mfd. (C25, C31, C36)	
5212	Capacitor—16 mfd. (C32)	
31818	Clip—Magic Eye mounting clip	
31780	Coil—Antenna coil (L1, L2, L3, L4)	
31782	Coil—Oscillator coil—"A" band only (L7)	
31783	Coil—Oscillator coil—"B" and "C" bands only (L5, L6)	
31781	Coil—R-f coil (L8, L9, L10, L11)	
31774	Condenser—3-gang variable tuning condenser (C4, C13, C19)	
31278	Cord—Band indicator cord	
31786	Cord—Variable condenser drive cord	
31787	Drive—Two-speed drive and mounting bracket	
31808	Drum—Variable condenser drive cord drum	
31304	Indicator—Band indicator strip	
11891	Lamp—Dial lamp	
31817	Plate—Cushion socket mounting plate — less socket	
5040	Plug—4-contact female plug for speaker cable	
14404	Plug—7-contact male plug for power input	
31788	Pulley—Two-speed drive pulley	
31280	Pulley—Indicator pointer drive cord pulley (large)	
31373	Pulley—Indicator pointer drive cord pulley (small)	
31272	Pulley—Range switch pulley	
14660	Resistor—18 ohms, ¼ watt (R15)	
14526	Resistor—200 ohms, wire wound, 2½ watt (R16)	
13204	Resistor—8,200 ohms, 2 watt (R13)	
13302	Resistor—10,000 ohms, 1/10 watt (R21)	
13045	Resistor—18,000 ohms, ¼ watt (R7)	
14167	Resistor—27,000 ohms, 2 watt (R22)	
11300	Resistor—33,000 ohms, 1/10 watt (R4)	
12719	Resistor—82,000 ohms, 1/10 watt (R20)	
14560	Resistor—100,000 ohms, ¼ watt (R11, R12)	
11398	Resistor—220,000 ohms, 1/10 watt (R10)	
12199	Resistor—270,000 ohms, ¼ watt (R18)	
13005	Resistor—390,000 ohms, 1/10 watt (R19)	
12013	Resistor—1 meg., 1/10 watt (R1, R2, R5)	
5131	Resistor—2.2 meg., 1/10 watt (R6)	
14887	Retainer—Indicator drive cord pulley retainer	
4669	Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808	
31364	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket	
31251	Socket—Octal base tube socket	
31279	Spring—Band indicator tension spring	
13638	Spring—Tension spring for pointer drive cable, or variable condenser drive cord	
31775	Switch—Range switch (S1, S2, S3, S4)	
31807	Tone Control and power switch (R17, S5, S6)	
31267	Transformer—First i-f transformer (L12, L13, C22, C23)	
31268	Transformer—Second i-f transformer (L14, L15, C26, C27)	
31450	Volume Control (R9)	
	SPEAKER ASSEMBLIES (RL63H-3)	
31825	Cap—Speaker cone center dust cap	
11469	Coil—Hum neutralizing coil (L17)	
12012	Coil—Speaker field coil (L18)	
31310	Cone—Speaker cone and voice coil (L16)	
31302	Plug—4-contact male plug for speaker	
31824	Speaker complete	
14355	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31800	Dial—Dial scale and crystal	
31831	Escutcheon—Dial scale escutcheon — less dial scale and crystal	
31801	Indicator—Indicator pointer and carriage	
31802	Knob—Station selector, tone control, volume control or range switch knob	
31287	Rod—Pointer carriage slide rod	
31306	Screen—Dial color screen and light diffuser	
14270	Spring—Retaining spring for knob Stock No. 31802	
31558	Spring—Stop spring for pointer slide rod	

RCA Victor

MODEL 8Q4

Chassis No. RC-337A

Eight-Tube, Four-Band Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

Long Wave ("X" Band)	150-400 kc (2,000-750 m)
Standard Broadcast ("A" Band)	530-1,720 kc (566-174 m)
Medium Wave ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)	7.0-22 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

Radiotron Complement

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6L7	1st-Detector
(3)	RCA-6J7	Oscillator
(4)	RCA-6K7	I-F Amplifier
(5)	RCA-6Q7	2nd-Detector, A.V.C., and Audio
(6)	RCA-6F6-G	Power Output
(7)	RCA-6U5	Tuning Indicator
(8)	RCA-5Y3-G (In PSU 8A, 8B, 8C AC power supply unit)	Rectifier
(8)	RCA-5W4 (In PSU 8E D-C power supply unit)	Rectifier

Pilot Lamps (2) .... Mazda No. 44, 6.3 volts, .25 amp.

Power Output

Undistorted	2.5 watts
Maximum	4.5 watts

Loudspeaker (RL-63J-1)

Type	8-inch electrodynamic
Voice-Coil Impedance at 400 cycles	2.2 ohms

Power Supply Ratings

A-C Ratings	Volts	Cycles
With PSU 8A	105-125	50-60
With PSU 8B	105-125	25-60
With PSU 8C	105-130, 140-160, 200-225, 225-250	50-60
D-C Rating		
With PSU 8E	105-125, 210-250	D-C

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	12-7/16	24½	10¾
Chassis Base Dimensions	2½	12	8

Over-all Chassis Height .... 9½ inches
Weight .... 32½ lbs. (net)
Tuning Drive Ratio .... 10 to 1, and 50 to 1

General Description

8Q4 is a table model, with eight-inch electrodynamic loudspeaker. It employs an eight-tube "Magic Brain" four-band superheterodyne circuit.

The power supply is built as a separate plug-in unit. Both a-c and d-c power supply units are available, as listed above under "Power Supply Ratings" in the electrical specifications.

Features of design include: One stage of r-f amplification; magnetite-core i-f transformers; magnetite-core "A" band and "X" band oscillator coils; air-dielectric trimmer capacitors; automatic volume control; automatic bass compensation; continuously-variable high-frequency tone control; "Magic Eye" tuning indicator; band indicator; straight-line dial; two-speed vernier tuning; dust-proof electrodynamic loudspeaker; terminals for Victrola Attachment (record player); two-point selectivity switch; plug for extension speaker.

Trademarks "Victrola," "Magic Eye," "Magic Brain," "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.
First Edition **Printed in U.S.A.**

Power Supply Units

Model 8Q4 has a seven-prong connector for connection to a separate power supply unit. Units are available in different ratings for a-c and d-c operation, as listed under "Power Supply Ratings" in the electrical specifications.

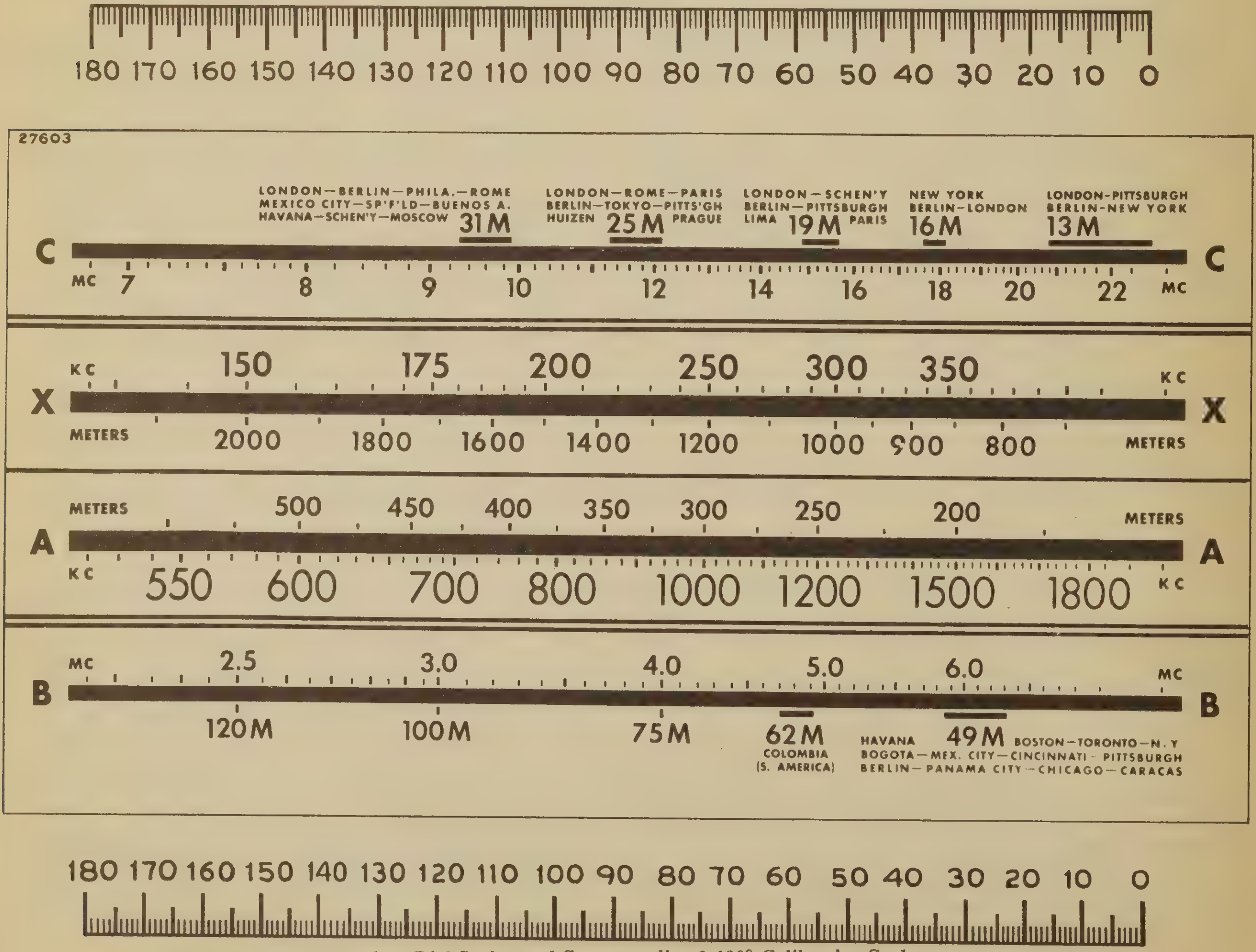
The d-c power supply unit (PSU 8E) is too large to be mounted inside the cabinet and may be placed on the table behind the receiver, or in any other convenient location that permits plugging into the connector on the receiver chassis.

Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.

Miscellaneous Service Data

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended. The voice coil of the extension speaker should be connected by means of two-conductor cable (such as is used on electric appliances) to the male plug. This cable may be any desired length up to several hundred feet. With a long run, it is advisable to use heavier cable. An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

Antenna Connections.—Three terminals ("A," "G1," and "G2") are provided on the rear of chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a D-C power supply is used.



Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 32° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

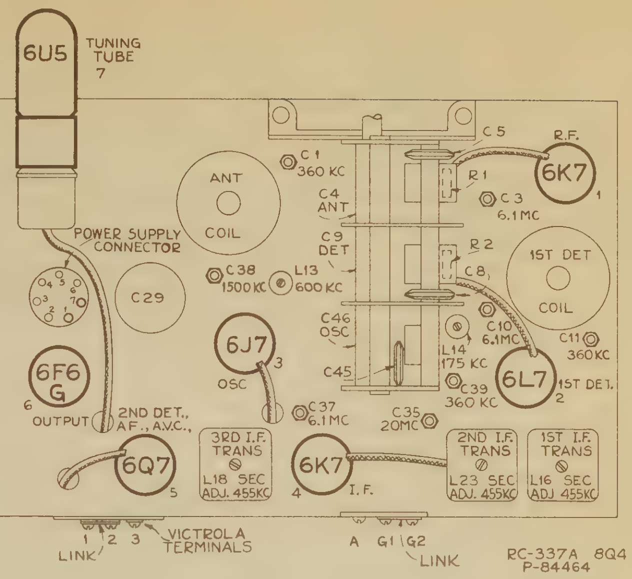
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand marks on the dial scale, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, with 300 ohm resistor from cap to chassis	455 kc	———	L17 and L18* (3rd I-F Trans.)
2	6L7 1st-Det. grid cap, with 300 ohm resistor from cap to chassis, regular grid lead removed from cap	455 kc	Fidelity control counter-clockwise (sharp)	L23 and L22 (2nd I-F Trans.) and L16 and L15** (1st I-F Trans.)
3	Antenna terminal (A), in series with 300 ohms	6.1 mc	6.1 mc (28.2°) "B" band	C37 (osc.)*** C10 (det.)† C3 (ant.)
4	Antenna terminal, in series with 300 ohms	20 mc	20 mc (22.5°) "C" band	C35 (osc.)††
5	Antenna terminal, in series with 200 mmf.	1,500 kc	1,500 kc (32°) "A" band	C38 (osc.)
6	Antenna terminal, in series with 200 mmf.	600 kc	600 kc (143.8°) "A" band	L13 (osc.)
7	Repeat steps 5 and 6.			
8	Adjust C39 so that it projects approximately 15/16-inch above top of chassis.			
9	Antenna terminal, in series with 200 mmf.	175 kc	175 kc (121.3°) "X" band	L14 (osc.)
10	Antenna terminal, in series with 200 mmfd.	360 kc	360 kc (30.2°) "X" band	C39 (osc.) C11 (det.) C1 (ant.)
11	Repeat oscillator adjustments in steps 9 and 10.			

* Adjust for coincident response curves when using oscillograph.

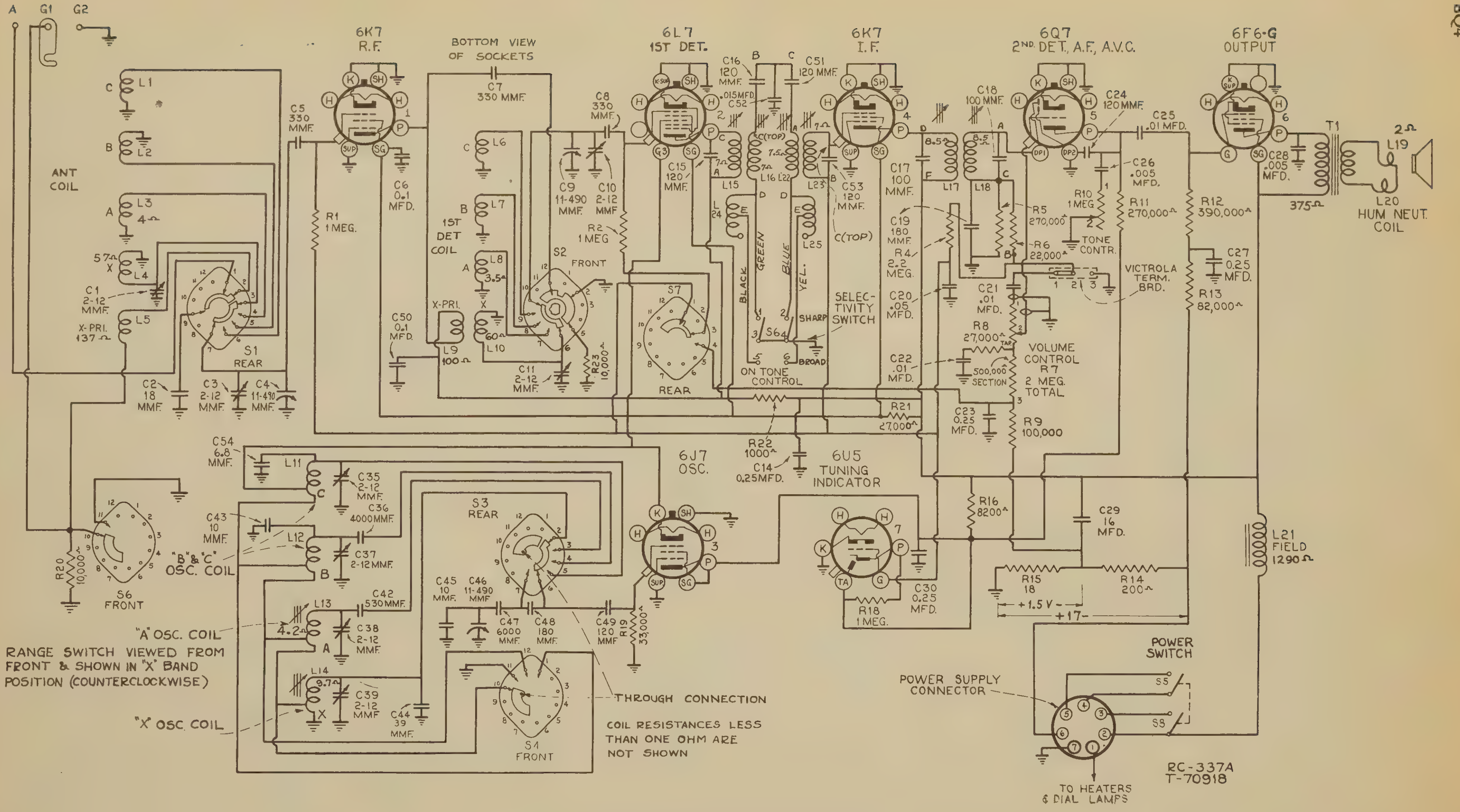
** Readjust L23, L22, L16, and L15 several times to secure coincident curves. Turn fidelity control full clockwise (broad) and check response, which should be symmetrical, and with **greater** gain than on sharp.

*** Use **minimum** capacity peak if two peaks can be obtained with C37.

† Rock the gang condenser slightly and use **maximum** capacity peak if two peaks can be obtained with C10. Check to determine that C37 has been adjusted to the correct peak by turning receiver to 5.19 mc (50°) where a weaker signal should be received.

†† Use **minimum** capacity peak if two peaks can be obtained, and check to determine that C35 has been adjusted to the correct peak by turning the receiver to 19.09 mc (27½°) where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

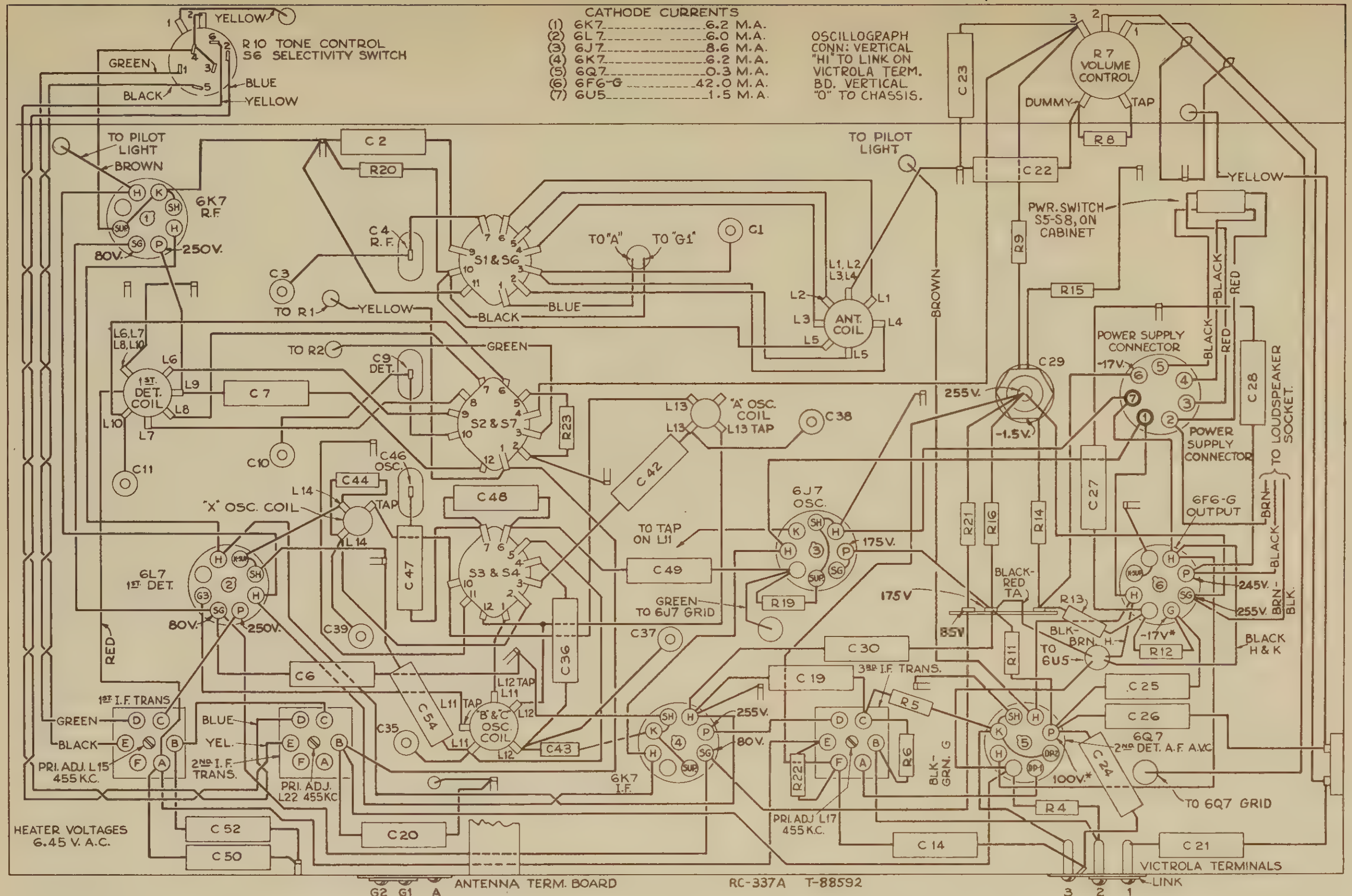


Schematic Circuit Diagram of Chassis

The Power Supply Units (PSU 8A, 8B, 8C, and 8E) are described in separate service data sheets, which should be referred to for further information.

Precautionary Lead Dress.—

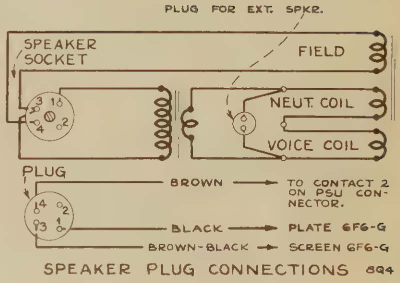
1. Dress all leads and wiring parts away from 6J7 oscillator grid.
2. Twist together the two leads from the 1st i-f transformer to the fidelity switch. Also the two leads from the 2nd i-f transformer.
3. Dress all leads away from the detector coil.
4. Dress leads from the detector coil to the range switch (contacts 7 and 8 on detector section of switch) away from the detector trimmer C10.



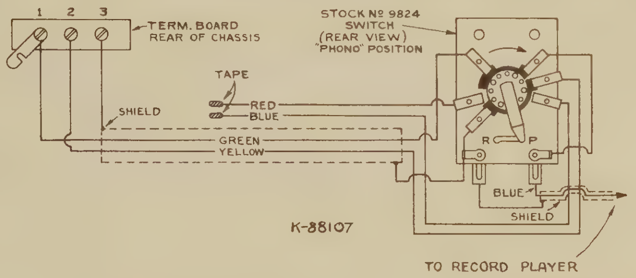
Bottom View of Chassis, with R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

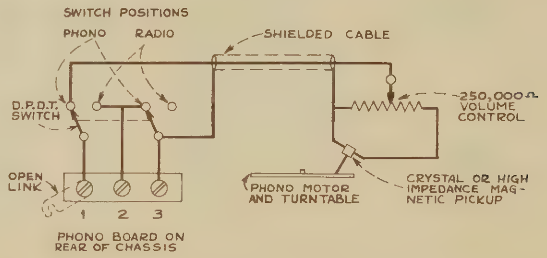
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.


PLUG FOR EXT. SPKR.
SPEAKER SOCKET
FIELD
NEUT. COIL
VOICE COIL
PLUG
BROWN → TO CONTACT 2 ON PSU CONNECTOR.
BLACK → PLATE 6F6-G
BROWN-BLACK → SCREEN 6F6-G
SPEAKER PLUG CONNECTIONS 8Q4

Connections of Loudspeaker and Cable

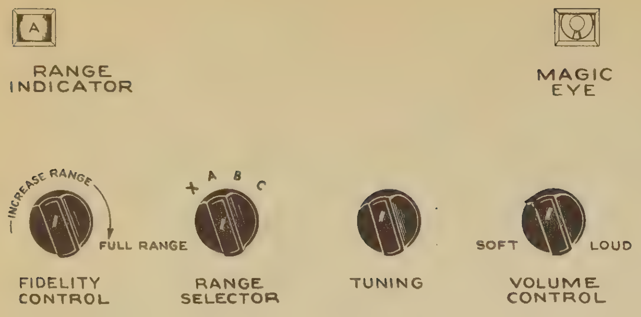

1 2 3
TERM. BOARD REAR OF CHASSIS
STOCK No 9824 SWITCH (REAR VIEW) "PHONO" POSITION
TAPE
RED
BLUE
SHIELD
GREEN
YELLOW
R
P
BLUE
SHIELD
K-88107
TO RECORD PLAYER

Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R-93 and R-94 series. A stock No. 9824 switch may be used to change from radio to record player as shown above.

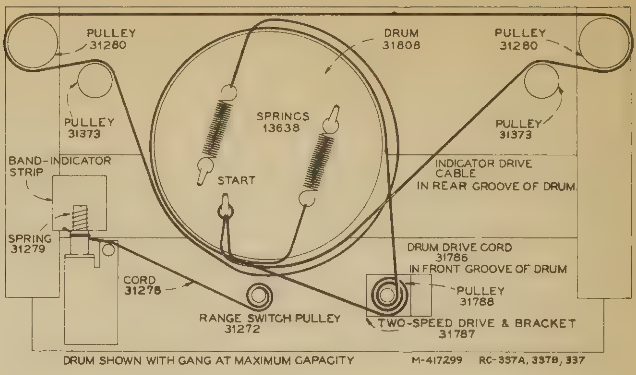

SWITCH POSITIONS
PHONO
RADIO
SHIELDED CABLE
D.P.D.T. SWITCH
250,000Ω VOLUME CONTROL
OPEN LINK
1 2 3
PHONO BOARD ON REAR OF CHASSIS
PHONO MOTOR AND TURNTABLE
CRYSTAL OR HIGH IMPEDANCE MAGNETIC PICKUP

In the event that a Stock No. 9824 switch is not available, a double-pole—double-throw toggle switch may be used, connecting it as shown above.

The radio volume control may be used to regulate the volume of the record player.



Location of Controls
A toggle-type power switch is mounted on the right-hand side of the cabinet


PULLEY 31280
DRUM 31808
PULLEY 31280
PULLEY 31373
SPRINGS 13638
PULLEY 31373
BAND-INDICATOR STRIP
START
INDICATOR DRIVE CABLE IN REAR GROOVE OF DRUM
SPRING 31279
DRUM DRIVE CORD 31786 IN FRONT GROOVE OF DRUM
CORD 31278
PULLEY 31788
RANGE SWITCH PULLEY 31272
TWO-SPEED DRIVE & BRACKET 31787
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY
M-417299
RC-337A, 337B, 337

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES (RC-337A)	
31815	Board—Antenna and ground terminal board...	
12717	Board—Phonograph input terminal board.....	
31303	Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord..........	
31820	Cable—Indicator pointer drive cable..........	
30766	Cap—Rubber cap for Magic Eye............	
12607	Cap—Top shield cap for first or second i-f transformer	
12714	Capacitor—Trimmer 2-12 mmfd. (C1, C3, C10, C11, C35, C37, C38, C39)..............	
14079	Capacitor—6.8 mmfd. (C54)................	
13200	Capacitor—10 mmfd. (C43, C45)...........	
12722	Capacitor—18 mmfd. (C2).................	
13545	Capacitor—39 mmfd. (C44)................	
31270	Capacitor—100 mmfd. (C17, C18)..........	
31813	Capacitor—120 mmfd. (C15, C16, C51, C53)	
12724	Capacitor—120 mmfd. (C24, C49)...........	
13003	Capacitor—180 mmfd. (C19, C49)...........	
12952	Capacitor—330 mmfd. (C5, C7, C8).........	
31790	Capacitor—530 mmfd. (C42)...............	
31792	Capacitor—4,000 mmfd. (C36).............	
31405	Capacitor—6,000 mmfd. (C47).............	
4838	Capacitor—.005 mfd. (C26, C28)...........	
14393	Capacitor—.01 mfd. (C21, C22, C25)........	
11315	Capacitor—.015 mfd. (C52)................	
4886	Capacitor—.05 mfd. (C20).................	
4839	Capacitor—0.1 mfd. (C6, C50).............	
12484	Capacitor—0.25 mfd. (C23)................	
5212	Capacitor—16 mfd. (C29)..................	
31818	Clip—Magic Eye mounting clip............	
31810	Coil—Antenna coil (L1, L2, L3, L4, L5)....	
31782	Coil—Oscillator coil—"A" band only (L13)..	
31783	Coil—Oscillator coil—"B" and "C" bands only (L11, L12)...........................	
31812	Coil—Oscillator coil—"X" band only (L14)..	
31811	Coil—R-f coil (L6, L7, L8, L9, L10).......	
31774	Condenser—3-gang variable tuning condenser (C4, C9, C46)..........................	
31278	Cord—Band indicator cord...............	
31786	Cord—Variable condenser drive cord..........	
31787	Drive—Two-speed drive and mounting bracket..	
31808	Drum—Variable condenser drive cord drum....	
31819	Indicator—Band indicator strip.............	
11891	Lamp—Dial lamp.......................	
31817	Plate—Cushion socket mounting plate — less socket	
5040	Plug—4-contact female plug for speaker cable..	
14404	Plug—7-contact male plug for power input....	
31788	Pulley—Two-speed drive pulley.............	
31280	Pulley—Indicator pointer drive cord pulley (large)	
31373	Pulley—Indicator pointer drive cord pulley (small)	
31272	Pulley—Range switch pulley...............	
14660	Resistor—18 ohms, ¼ watt (R15)...........	
14526	Resistor—200 ohms, wire-wound, 2½ watt (R14)	
14837	Resistor—1,000 ohms, 1/10 watt (R22)......	
13204	Resistor—8,200 ohms, 2 watt (R16)........	
13302	Resistor—10,000 ohms, 1/10 watt (R23).....	
14559	Resistor—10,000 ohms, ¼ watt (R20)........	
14284	Resistor—22,000 ohms, 1/10 watt (R6)......	
12738	Resistor—27,000 ohms, ¼ watt (R8).........	
14167	Resistor—27,000 ohms, 2 watt (R21)........	
11300	Resistor—33,000 ohms, 1/10 watt (R19).....	
14023	Resistor—82,000 ohms, ¼ watt (R13)........	
14560	Resistor—100,000 ohms, ¼ watt (R9)........	
11453	Resistor—270,000 ohms, 1/10 watt (R5).....	
12199	Resistor—270,000 ohms, ¼ watt (R11).......	
13005	Resistor—390,000 ohms, 1/10 watt (R12)...	
12013	Resistor—1 meg., 1/10 watt (R1, R2, R18)..	
5131	Resistor—2.2 meg., 1/10 watt (R4).........	
14887	Retainer—Indicator drive cord pulley retainer..	
4669	Screw—No. 8-32 x 3/8-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808.................	
31364	Socket—Dial lamp socket..................	
13871	Socket—Magic Eye socket..................	
31251	Socket—Octal base tube socket.............	
31279	Spring—Band indicator tension spring........	
13638	Spring—Tension spring for pointer drive cable, or variable condenser drive cord...........	
31823	Switch—D.P.S.T. power switch with leads (S5, S8)	
31806	Switch—Range switch (S1, S2, S3, S4, S6, S7)	
31546	Tone Control and selectivity switch (R10, S6)	
31063	Transformer—First i-f transformer (L15, L16, L24, C15, C16).......................	
31064	Transformer—Second i-f transformer (L22, L23, L25, C51, C53)......................	
31268	Transformer—Third i-f transformer (L17, L18, C17, C18)............................	
31450	Volume Control (R7)......................	
	SPEAKER ASSEMBLIES (RL63J-1)	
31825	Cap—Speaker cone center dust cap..........	
11469	Coil—Hum neutralizing coil (L20)..........	
12012	Coil—Speaker field coil (L21).............	
31828	Cone—Speaker cone and voice coil (L19).....	
31826	Plug—4-contact male plug for speaker........	
31827	Speaker—Complete	
14355	Transformer—Output transformer (T1).......	
	MISCELLANEOUS ASSEMBLIES	
31834	Dial—Dial scale and crystal.................	
31832	Escutcheon—Dial scale escutcheon — less dial scale and crystal......................	
31717	Indicator—Indicator pointer and carriage......	
31802	Knob—Station selector, tone control, volume control or range switch knob.............	
30868	Plug—2-contact female plug for speaker cable..	
30870	Plug—2-contact male plug for speaker cable...	
31287	Rod—Pointer carriage slide rod..............	
14270	Spring—Retaining spring for knob, Stock No. 31802	
31558	Spring—Stop spring for pointer slide rod......	

RCA Victor

MODEL 10Q1

Chassis No. RC-337B

Ten-Tube, Three-Band, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

Standard Broadcast ("A" Band)	530-1720 kc (566-174 m)
Medium Wave ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)	7.0-22 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

Radiotron Complement

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6L7	1st-Detector
(3)	RCA-6J7	Oscillator
(4)	RCA-6K7	1st I-F Amplifier
(5)	RCA-6B8	2nd I-F amp., 2nd-Det., A.V.C.
(6)	RCA-79	Phase Inverter and Audio
(7)	RCA-6F6-G	Power Output
(8)	RCA-6F6-G	Power Output
(9)	RCA-6U5	Tuning Indicator
(10)	RCA-5U4-G (In PSU 10A, 10B, 10C A-C power supply unit)	Rectifier
(10)	RCA-5T4 (In PSU 10E D-C power supply unit)	Rectifier

Pilot Lamps (2) .... Mazda No. 44, 6.3 volts, 0.25 amp.

Power Output Rating

Undistorted	10 watts
Maximum	12 watts

Loudspeaker (RL-63H-4)

Type	8-inch electrodynamic
Voice-coil Impedance at 400 cycles	2.2 ohms

Power Supply Ratings

	Volts	Cycles
A-C Ratings		
With PSU 10A Power Supply Unit	105-125	50-60
With PSU 10B Power Supply Unit	105-125	25-60
With PSU 10C Power Supply Unit	105-130, 140-160 200-225, 225-250	50-60
D-C Ratings		
With PSU 10E Power Supply Unit	105-125, 210-250	D-C

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	22¼	18¼	11-3/16
Chassis-Base Dimensions (inches)	2½	12	8

Overall Chassis Height .... 9½ inches
Weight .... 40 lbs. (net)
Tuning Drive Ratio .... 10 to 1, and 50 to 1

General Description

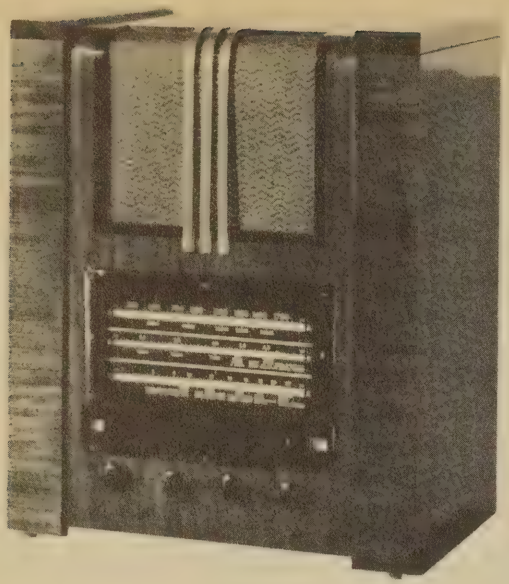
Model 10Q1 is a table-type receiver, with eight-inch electrodynamic loudspeaker, and employs a ten-tube "Magic Brain" superheterodyne circuit.

The power supply is built as a separate plug-in unit. Both a-c and d-c units are available as listed above in the electrical specifications under "Power Supply Ratings."

Features of design include: One stage of R-F, and two stages of I-F amplication; twelve-watt push-pull output stage; magnetite-core I-F transformers; magnetite-core "A" band oscillator coil; air-dielectric trimmer capacitors; automatic volume control; aural-compensated manual volume control; continuously-variable high-frequency tone control; two-speed vernier tuning; straight-line dial; band indicator; "Magic Eye" tuning indicator; sensitivity switch; plug for extension speaker; terminals for Victrola Attachment (record player); dust-proof electrodynamic loudspeaker.

Trademarks "Victrola," "Magic Eye," "Magic Brain," "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition
Printed in U.S.A.



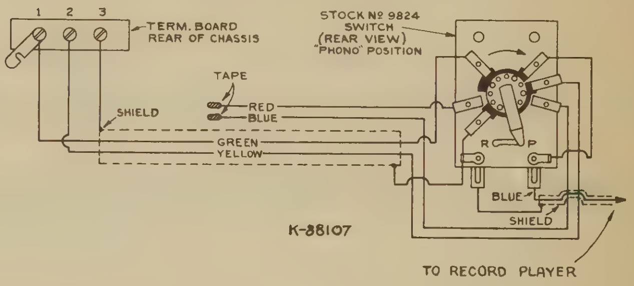
Model 10Q1

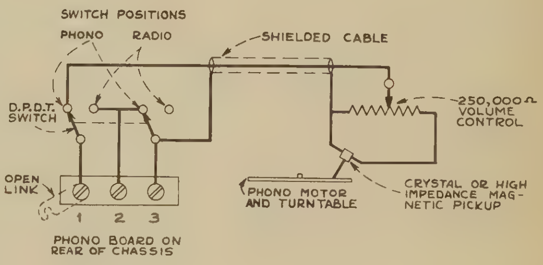
Miscellaneous Service Data

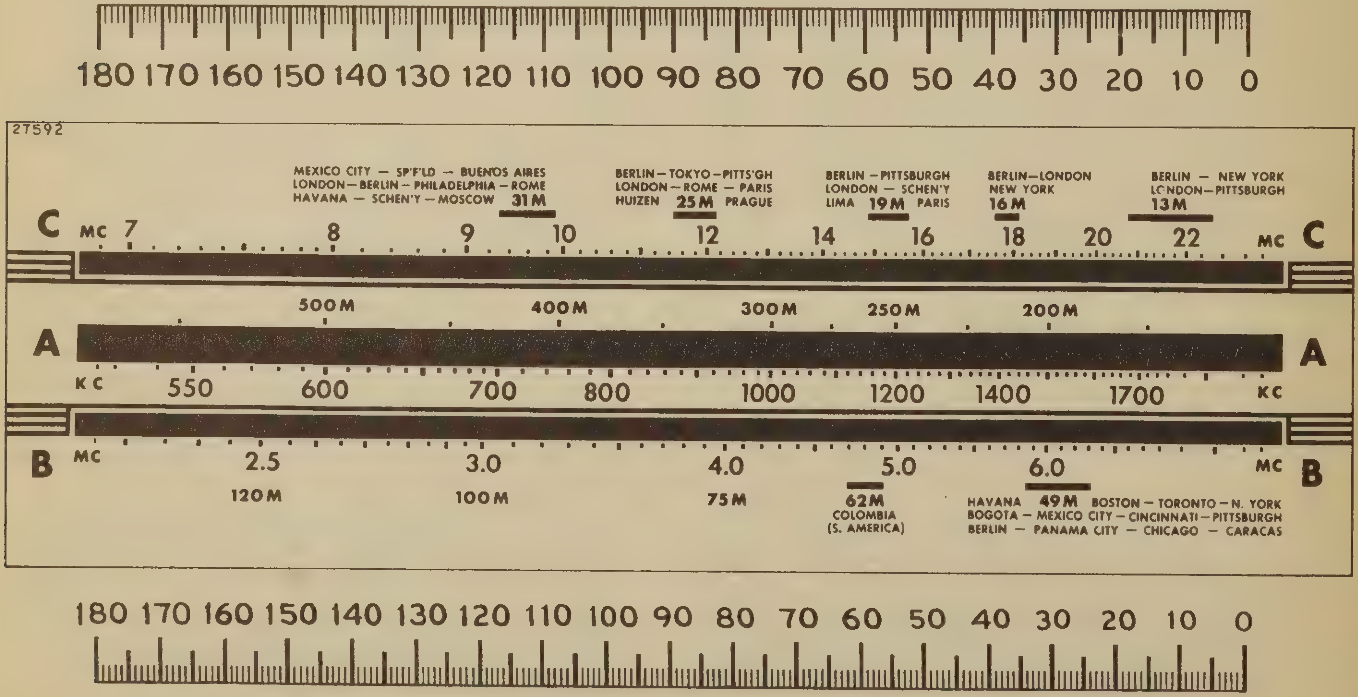
Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended. The voice coil of the extension speaker should be connected by means of two-conductor cable (such as is used on electric appliances) to the male plug. This cable may be any desired length up to several hundred feet. With a long run, it is advisable to use heavier cable. An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

Victrola Attachment (record player). — Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player), such as the RCA R-93 or R-94 series. A Stock No. 9824 switch may be used to change from radio to record player. The connections for this switch are shown below.

In the event that a Stock No. 9824 switch is not available, a double-pole, double-throw toggle switch may be used, connecting it as shown in the second diagram below.







Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 31° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
Leave sensitivity switch open (minimum sensitivity) for all alignment operations.				
1	6B8 2nd I-F grid cap, in series with .01 mfd.	455 kc	"C" band Quiet Point.	L16 and L17 (3rd I-F Trans.)
2	6K7 1st I-F grid cap, in series with .01 mfd.			L14 and L15 (2nd I-F Trans.)
3	6L7 1st Det. grid cap, in series with .01 mfd.			L12 and L13 (1st I-F Trans.)
4	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C8 (osc.)* C14 (det.)† C3 (ant.)
5	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C5 (osc.)††
6	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C9 (osc.)
7	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L7 (osc.)‡
8	Repeat Step No. 6			

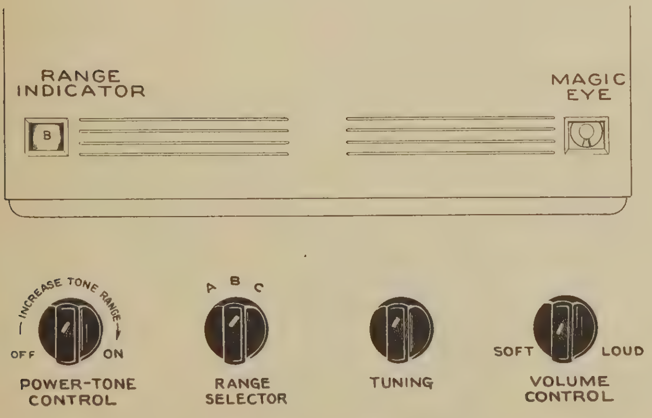
* Use **minimum** capacity peak if two peaks can be obtained.

† Rock the gang condenser slightly, and use the **maximum** capacity peak if two peaks can be obtained with trimmer C14. Check to determine that C8 has been adjusted to the correct peak by turning the receiver to 5.19 mc (50°), where a weaker signal should be received.

†† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C5 has been adjusted to the correct peak by turning the receiver dial to 19.09 mc (29.5°), where a weaker signal should be received.

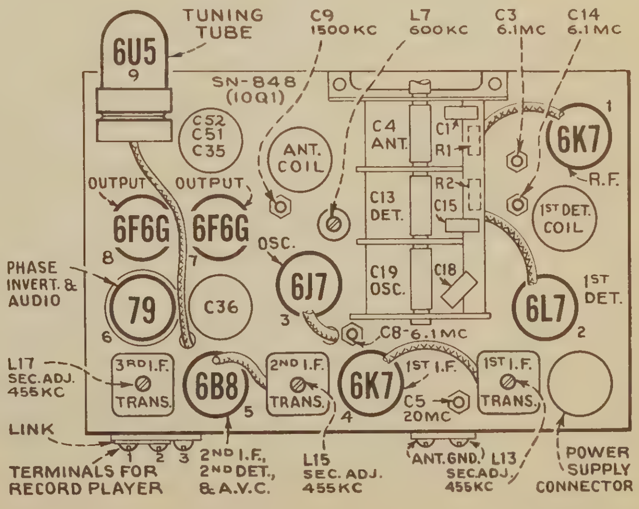
‡ Rock gang condenser slightly while peaking L7 for maximum output.

NOTE: Oscillator tracks 455 kc **above** the signal on all bands.

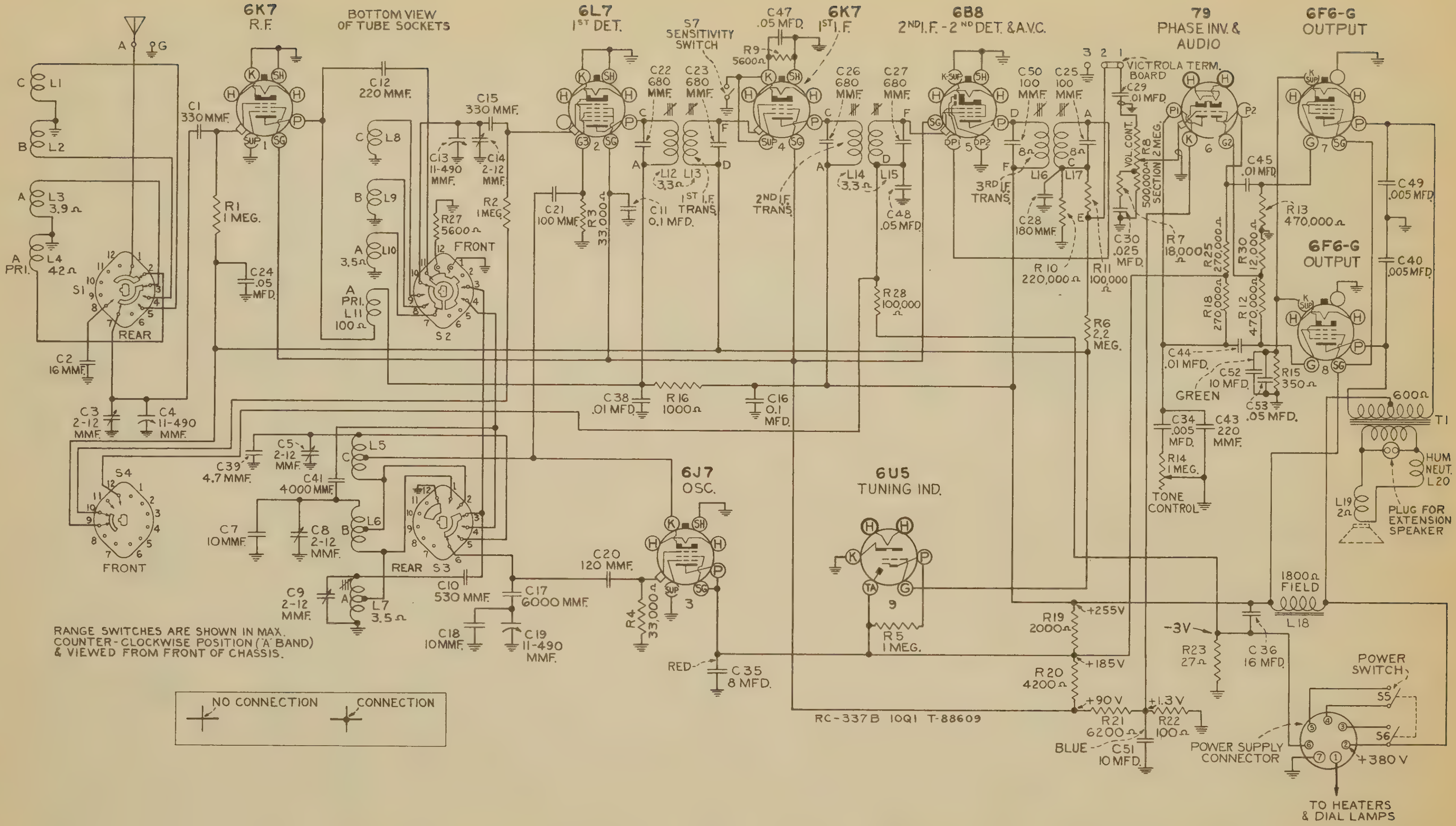


Location of Controls

To turn on the receiver, turn the power-tone control fully clockwise, past the snap of the switch. To turn off the receiver, turn this knob fully counter-clockwise. The sensitivity switch is mounted on rear of chassis.



Top View, Showing Location of Tubes and Trimmers

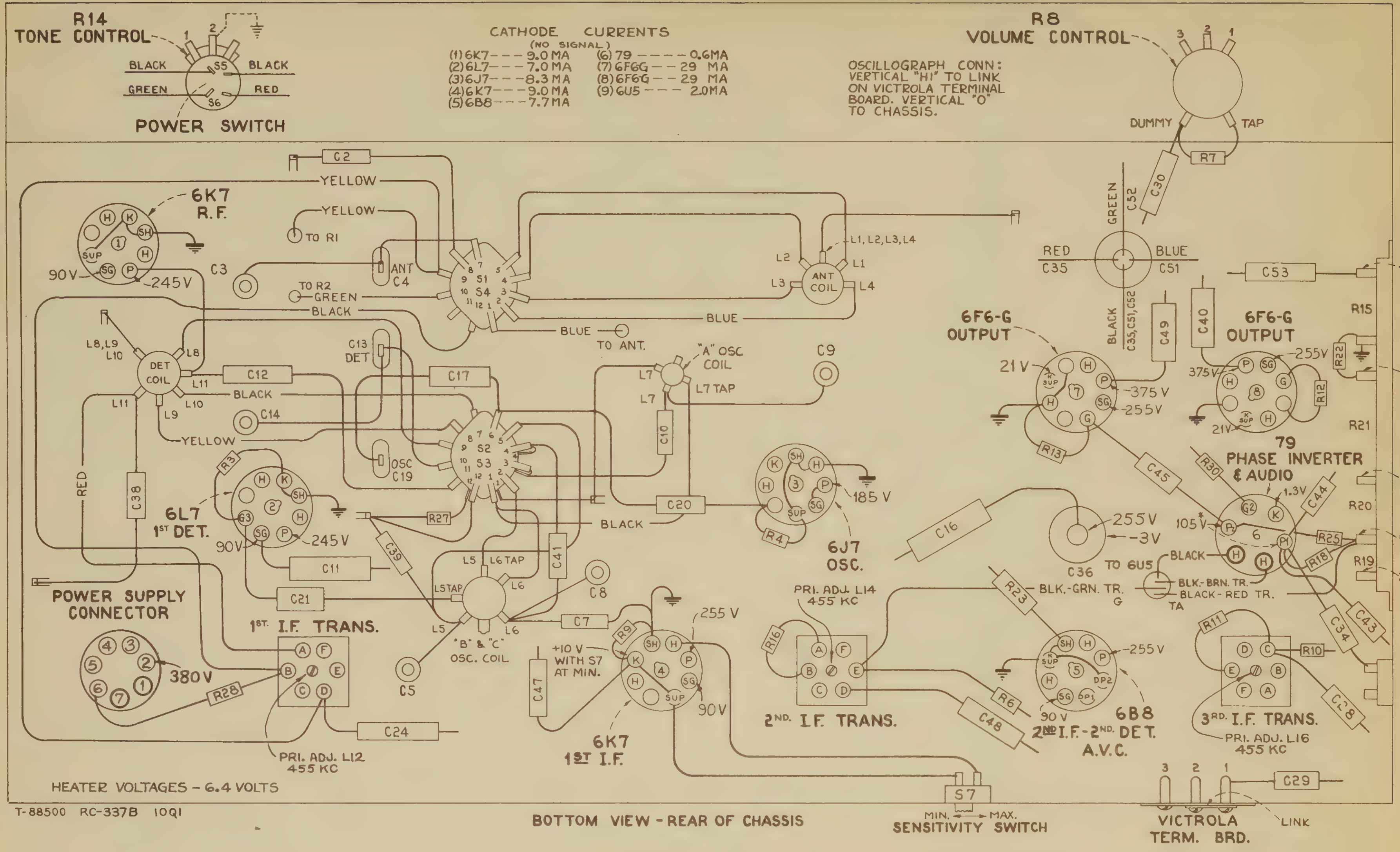


Schematic Circuit Diagram of Receiver Chassis

The power supply units (PSU 10A, 10B, 10C, and 10E) for this receiver are described in separate service data sheets, which should be referred to for further information.

Precautionary Lead Dress.—

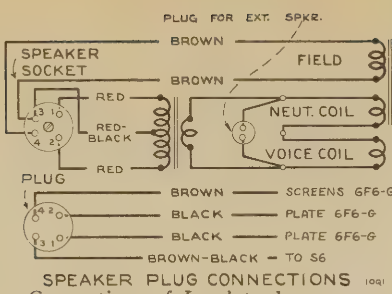
1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.



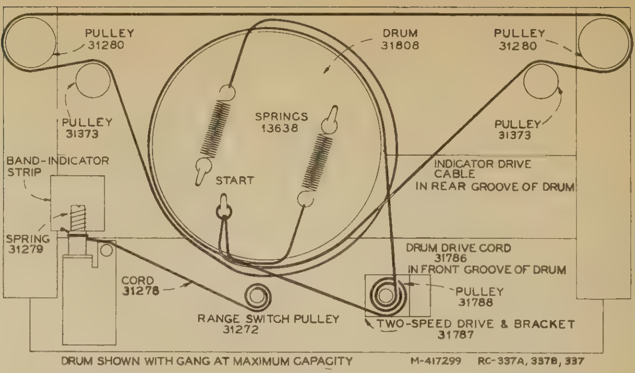
Bottom View of Receiver Chassis, with R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum, and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Connections of Loudspeaker and Cable


PULLEY 31280
DRUM 31808
PULLEY 31280
PULLEY 31373
SPRINGS 13638
PULLEY 31373
BAND-INDICATOR STRIP
START
INDICATOR DRIVE CABLE IN REAR GROOVE OF DRUM
SPRING 31279
DRUM DRIVE CORD 31786 IN FRONT GROOVE OF DRUM
CORD 31278
PULLEY 31788
RANGE SWITCH PULLEY 31272
TWO-SPEED DRIVE & BRACKET 31787
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY
M-417299
RC-337A, 337B, 337

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Power Supply Units

The receiver chassis has a seven-prong male connector for connection to the power supply unit. Both A-C and D-C power supply units are available, as listed under "Power Supply Ratings" in the electrical specifications.

Schematic Diagrams and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES (RC337B)	
13216	Board—Antenna and ground terminal board...	
12717	Board—Phonograph input terminal board.....	
31303	Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord...........	
31820	Cable—Indicator pointer drive cable..........	
30766	Cap—Rubber cap for Magic Eye............	
4629	Cap—Tube shield cap......................	
12714	Capacitor—Trimmer 2-12 mmfd. (C3, C5, C8, C9, C14)............................	
14392	Capacitor—4.7 mmfd. (C39)...............	
13200	Capacitor—10 mmfd. (C7, C18)............	
31791	Capacitor—16 mmfd. (C2)..................	
31270	Capacitor—100 mmfd. (C25, C50)..........	
12720	Capacitor—100 mmfd. (C21)...............	
12724	Capacitor—120 mmfd. (C20)...............	
13003	Capacitor—180 mmfd. (C28)...............	
12694	Capacitor—220 mmfd. (C12, C43)..........	
12952	Capacitor—330 mmfd. (C1, C15)...........	
31790	Capacitor—530 mmfd. (C10)...............	
31552	Capacitor—680 mmfd. (C22, C23, C26, C27)..	
31792	Capacitor—4,000 mmfd. (C41)..............	
31405	Capacitor—6,000 mmfd. (C17)..............	
4838	Capacitor—.005 mfd. (C34, C40, C49).......	
14393	Capacitor—.01 mfd. (C29, C38, C44, C45)...	
4870	Capacitor—.025 mfd. (C30)................	
4886	Capacitor—.05 mfd. (C24, C47, C48, C53)...	
4839	Capacitor—0.1 mfd. (C16)..................	
31809	Capacitor—Comprising one 8 mfd. and two 10 mfd. sections (C35, C51, C52)............	
5212	Capacitor—16 mfd. (C36)..................	
31818	Clip—Magic Eye mounting clip.............	
31780	Coil—Antenna coil (L1, L2, L3, L4)........	
31782	Coil—Oscillator coil—"A" band only (L7)....	
31783	Coil—Oscillator coil—"B" and "C" bands only (L5, L6)............................	
31781	Coil—R-f coil (L8, L9, L10, L11)..........	
31774	Condenser—3-gang variable tuning condenser (C4, C13, C19)......................	
31278	Cord—Band indicator cord..................	
31786	Cord—Variable condenser drive cord..........	
31787	Drive—Two-speed drive and mounting bracket	
31808	Drum—Variable condenser drive cord drum....	
31304	Indicator—Band indicator strip.............	
11891	Lamp—Dial lamp...........................	
31817	Plate—Cushion socket mounting plate — less socket	
5040	Plug—4-contact female plug for speaker cable..	
14404	Plug—7-contact male plug for power input....	
31788	Pulley—Two-speed drive pulley..............	
31280	Pulley—Indicator pointer drive cord pulley (large)	
31373	Pulley—Indicator pointer drive cord pulley (small)	
31272	Pulley—Range switch pulley................	
12453	Resistor—27 ohms, ½ watt (R23)...........	
31821	Resistor—100 ohms, 1/10 watt (R22)........	
14837	Resistor—1,000 ohms, 1/10 watt (R16)......	
31789	Resistor—5,600 ohms, 1/10 watt (R9, R27)..	
11399	Resistor—12,000 ohms, 1/10 watt (R30).....	
13045	Resistor—18,000 ohms, ¼ watt (R7).........	
11300	Resistor—33,000 ohms, 1/10 watt (R3, R4)..	
14560	Resistor—100,000 ohms, ¼ watt (R11, R28)..	
11398	Resistor—220,000 ohms, 1/10 watt (R10)....	
12199	Resistor—270,000 ohms, ¼ watt (R18, R25)..	
11452	Resistor—470,000 ohms, 1/10 watt (R12, R13)	
12013	Resistor—1 meg., 1/10 watt (R1, R2, R5)...	
5131	Resistor—2.2 meg., 1/10 watt (R6)..........	
31814	Resistor—Voltage divider comprising one 2,000 ohm, one 4,200 ohm, one 6,200 ohm, and one 350 ohm sections (R15, R19, R20, R21)...	
14887	Retainer—Indicator drive cord pulley retainer..	
4669	Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808.................	
3682	Shield—Tube shield.........................	
31364	Socket—Dial lamp socket....................	
13871	Socket—Magic Eye socket..................	
31251	Socket—Octal base tube socket.............	
31816	Socket—6-contact tube socket..............	
31279	Spring—Band indicator tension spring........	
13638	Spring—Tension spring for pointer drive cable, or variable condenser drive cord............	
30953	Switch—S.P.S.T. sensitivity switch (S7)......	
31775	Switch—Range switch (S1, S2, S3, S4)......	
31807	Tone Control and power switch (R14, S5, S6)	
31779	Transformer—First i-f transformer (L12, L13, C22, C23)............................	
31779	Transformer—Second i-f transformer (L14, L15, C26, C27)............................	
31268	Transformer—Third i-f transformer (L16, L17, C25, C50)............................	
31450	Volume Control (R8)........................	
	SPEAKER ASSEMBLIES (RL63H-4)	
31825	Cap—Speaker cone center dust cap...........	
11469	Coil—Hum neutralizing coil (L20)...........	
11234	Coil—Speaker field coil (L18)...............	
31310	Cone—Speaker cone and voice coil (L19)....	
5039	Plug—4-contact male plug for speaker........	
31829	Speaker complete...........................	
14534	Transformer—Output transformer (T1).......	
	MISCELLANEOUS ASSEMBLIES	
31833	Dial—Dial scale and crystal.................	
31832	Escutcheon—Dial scale escutcheon — less dial scale and crystal........................	
31717	Indicator—Indicator pointer and carriage.....	
31802	Knob—Station selector, tone control, volume control or range switch knob..............	
30868	Plug—2-contact female plug for speaker cable..	
30870	Plug—2-contact male plug for speaker cable...	
31287	Rod—Pointer carriage slide rod..............	
14270	Spring—Retaining spring for knob Stock No. 31802	
31558	Spring—Stop spring for pointer slide rod......	

RCA Victor

MODELS 11Q4, 11QK, and 11QU

Chassis No. RC-335-C RC-335-C RC-335-E

Eleven-Tube, Four-Band, Electric-Tuning, A-C, Radios and Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

Long Wave ("X" Band)	150-400 kc (2,000-750 m)
Medium Wave ("A" Band)	545-1,650 kc (550-182 m)
Short Wave 1 ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave 2 ("C" Band)	7.0-22 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

RADIOTRON COMPLEMENT

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6L7	1st-Detector
(3)	RCA-6J7	Oscillator
(4)	RCA-6K7	1st I-F Amplifier
(5)	RCA-6K7	2nd I-F Amplifier
(6)	RCA-6Q7	2nd-Det., A.V.C., and Audio
(7)	RCA-6F5	Inverter
(8)	RCA-6F6-G	Power Output
(9)	RCA-6F6-G	Power Output
(10)	RCA-6U5	Tuning Tube
(11)	RCA-5T4	Full-Wave Rectifier

Pilot Lamps (11Q4 and 11QK) .... One Mazda 47, 6-8 volts, .15 amp.; Two Mazda 44, 6.3 volts, .25 amp.
Pilot Lamps (11QU) .... One Mazda 47, 6-8 volts, .15 amp.; Three Mazda 44, 6.3 volts, .25 amp.

POWER OUTPUT

Undistorted .... 10 watts
Maximum .... 12 watts

LOUDSPEAKER (Electrodynamic)	Model 11Q4	Model 11QK	Model 11QU
Diameter (inches)	8	12	12
Voice-Coil Impedance at 400 cycles (ohms)	2.2	2.2	2.2

POWER SUPPLY RATINGS	Models 11Q4, 11QK	Model 11QU
Rating C, 105-130/140-160/195-250 volts, 50-60 cycles	120 watts	145 watts (total) 120 watts (radio)

Mechanical Specifications

CABINET DIMENSIONS (inches)	Model 11Q4	Model 11QK	Model 11QU
Height	21⅝	41½	34
Width	18½	28½	36¼
Depth	11¹⁵⁄16	14½	17⅛
Net Weight (lbs.)	43½	76	102

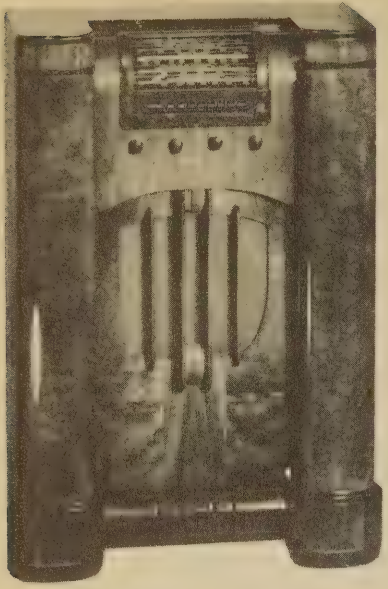
Chassis Base Dimensions (inches) .... 15⅝ wide, 8½ deep, 3¼ high
Tuning Drive Ratio (Manual) .... 18 to 1

PHONOGRAPH (Model 11QU)

Type	Automatic
Record Capacity	Eight 10-inch or seven 12-inch
Turntable Speed	78 r.p.m. (adjustable)
Type Pickup	Crystal
Pickup Impedance at 1,000 cycles	100,000 ohms

First Edition
Trademark "Magic Eye," "Magic Brain," "Victrola," "Radiotron" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.
Printed in U. S. A.

General Description



Model 11Q4
TABLE MODEL
8-inch Speaker

←
Model 11QK
CONSOLE
12-inch Speaker

Model 11QU
AUTOMATIC VICTROLA
12-inch Speaker

Model 11Q4 is a table-type radio, with 8-inch speaker; Model 11QK is a console radio with 12-inch speaker; Model 11QU is a combination radio and automatic Victrola with 12-inch speaker.

Radio features include: Electric motor tuning for eight stations in "X" and "A" band; Armchair Control (optional); one stage of r-f and two stages of i-f amplification; 12-watt push-pull power output stage; magnetite-core i-f and oscillator coils; air-dielectric trimmer capacitors; temperature-compensated circuits; two-position selectivity switch; fidelity control; sensitivity switch; automatic volume control; automatic bass compensation; Magic Eye tuning indicator; Magic Brain; dust-proof electrodynamic loudspeaker; plug for extension speaker; vernier tuning; straight-line dial; band indicator; push-button and jack for Victrola Attachment in Models 11Q4 and 11QK, and for Victrola operation in Model 11QU.

The Phonograph mechanism in Model 11QU may be played either manually or automatically. In the automatic position eight 10-inch or seven 12-inch records may be played in succession. Phonograph features include: New gentle-action automatic record-changer mechanism; extended frequency-range feather-touch crystal pickup with true-tracking tone arm; new top-loading needle socket and automatic needle cup; self-starting motor with flexible coupling drive; manual control-speed regulator; selective record ejector: duplex controls for Victrola and radio.

Miscellaneous Service Data

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended: With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

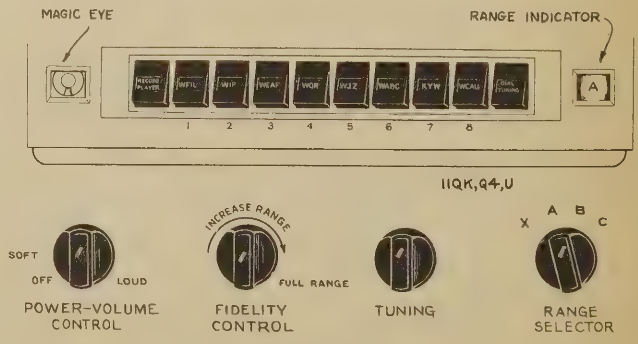
The RCA MI-6248 8-inch diameter Alnico permanent-magnet dynamic loudspeaker, which has a 2-ohm voice coil, and a power-handling capacity of 5 watts, is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

The voice coil of the extension speaker should be connected by means of two-conductor cable, such as is used on electrical appliances, to the male plug. The cable may be any desired length, but with a long run, when using a low-impedance extension speaker, it is advisable to use heavy cable.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

Precautionary Lead Dress.—

1. Dress grid lead of 6K7 R-F away from detector section of gang to prevent oscillation.
2. Observe the following points to permit alignment of "C" band at 20 mc: C10, C11, and C12 from oscillator section of gang must have short leads and be dressed away from the chassis and from the range-switch shield.
3. The ground braids from gang condenser must be flexible to prevent microphonic howling.
4. R10 and R11 should be soldered as close as possible to "A" lug on 3rd I-F transformer.
5. Power cord leads must be dressed away from the volume-control wiring.



Location of Controls

A sensitivity switch is mounted at the rear of the receiver.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

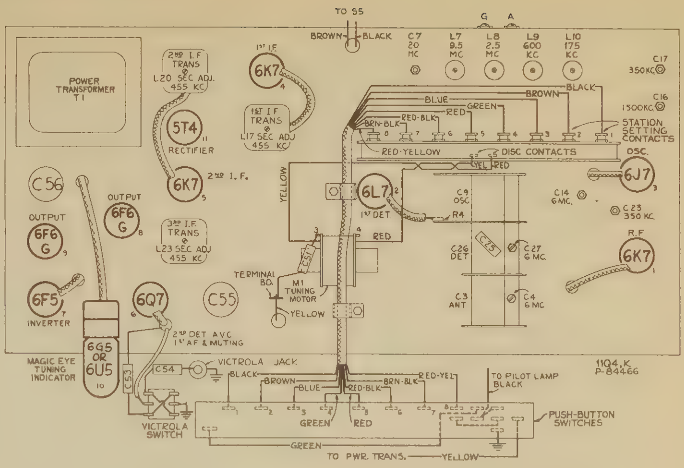
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.



Top View, Showing Location of Tubes and Trimmers

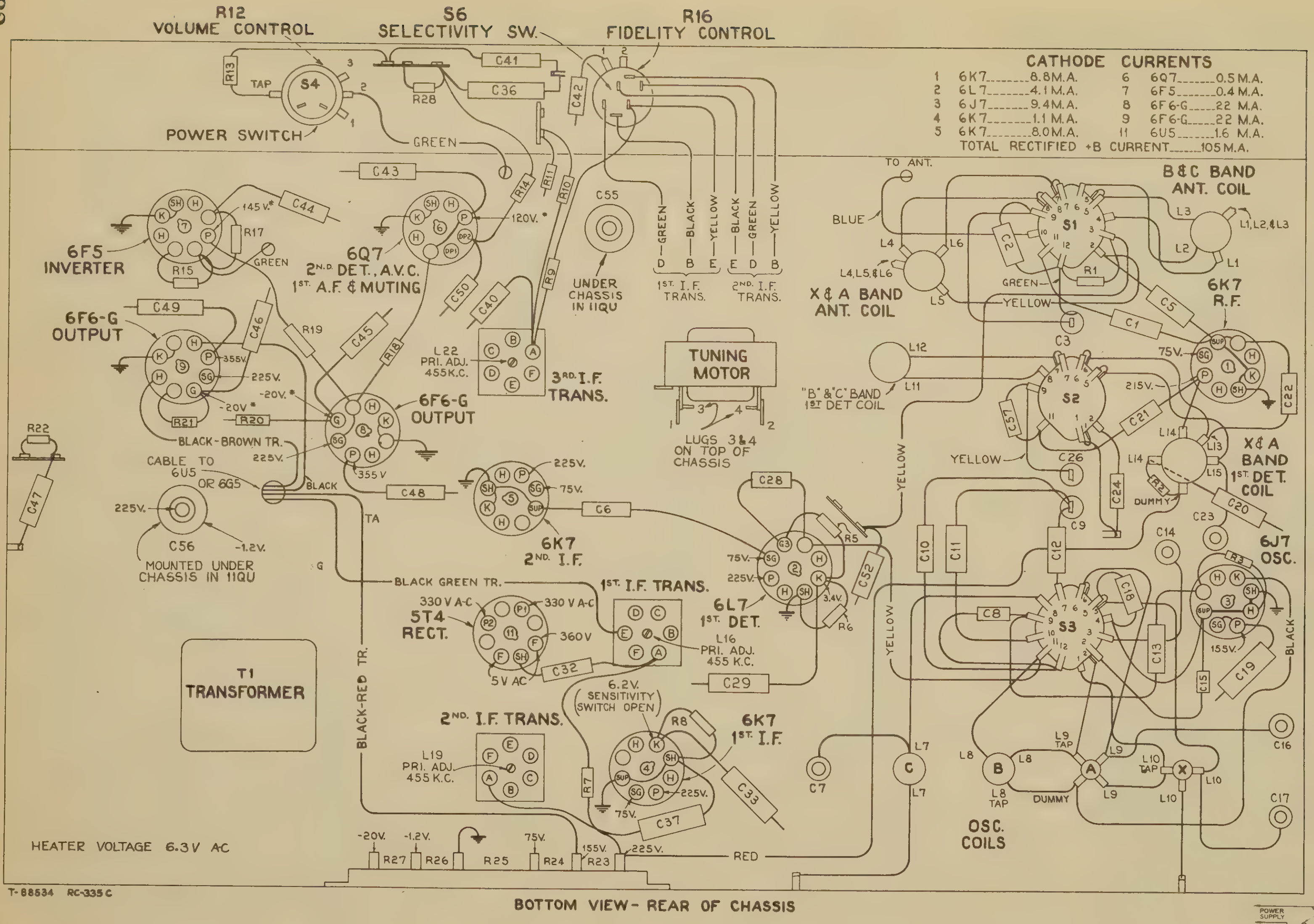
Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following to obtain maximum output
1	Turn fidelity control counter-clockwise (sharp), and sensitivity switch at minimum (open).			
2	6K7 2nd I-F grid cap in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L22 and L23 (3rd I-F Trans.)
3	6K7 1st I-F grid cap in series with .01 mfd.			L19 and L20 (2nd I-F Trans.)
4	6L7 1st-det. grid cap in series with .01 mfd.			L16 and L17 (1st I-F Trans.)
5	Turn fidelity switch clockwise (broad) and check I-F response which should be a double-peaked curve. Leave fidelity counter-clockwise (sharp) for all of the following steps.			
6	Antennna Terminal in series with 300 ohms	2.5 mc	2.5 mc ("B") 24½°	L8 (osc.)
7		6.0 mc	6.0 mc ("B") 147°	C14 (osc.) Use minimum capacity peak C27 (det.) Use maximum capacity peak C4 (ant.) Use maximum capacity peak*
8		9.5 mc	9.5 mc ("C") 55°	L7 (osc.)
9		20 mc	20 mc ("C") 153°	C7 (osc.) Use minimum capacity peak*
10	Antennna Terminal in series with 200 mmf.	600 kc	600 kc ("A") 24½°	L9 (osc.) Rock gang
11		1,500 kc	1,500 kc ("A") 151½°	C16 (osc.)
12	Repeat steps 10 and 11.			
13	Antennna Terminal in series with 200 mmf.	175 kc	175 kc ("X") 53½°	L10 (osc.)
14		350 kc	350 kc ("X") 145½°	C17 (osc.) C23 (det.)
15	Repeat steps 13 and 14.			

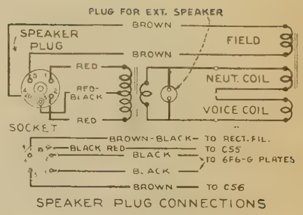
* Check to determine that the oscillator trimmer has been adjusted to the correct peak by tuning the receiver approximately 910 kc lower, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.



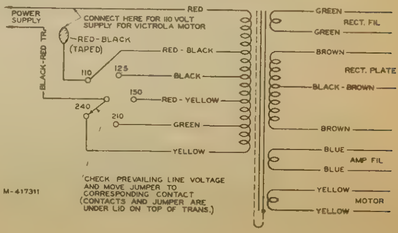
	CATHODE	CURRENTS		
1	6K7	8.8 M.A.	6	6Q7 0.5 M.A.
2	6L7	4.1 M.A.	7	6F5 0.4 M.A.
3	6J7	9.4 M.A.	8	6F6-G 22 M.A.
4	6K7	1.1 M.A.	9	6F6-G 22 M.A.
5	6K7	8.0 M.A.	11	6U5 1.6 M.A.

TOTAL RECTIFIED +B CURRENT 105 M.A.



Connections of Loudspeaker and Cable

Universal Power Transformer Connections

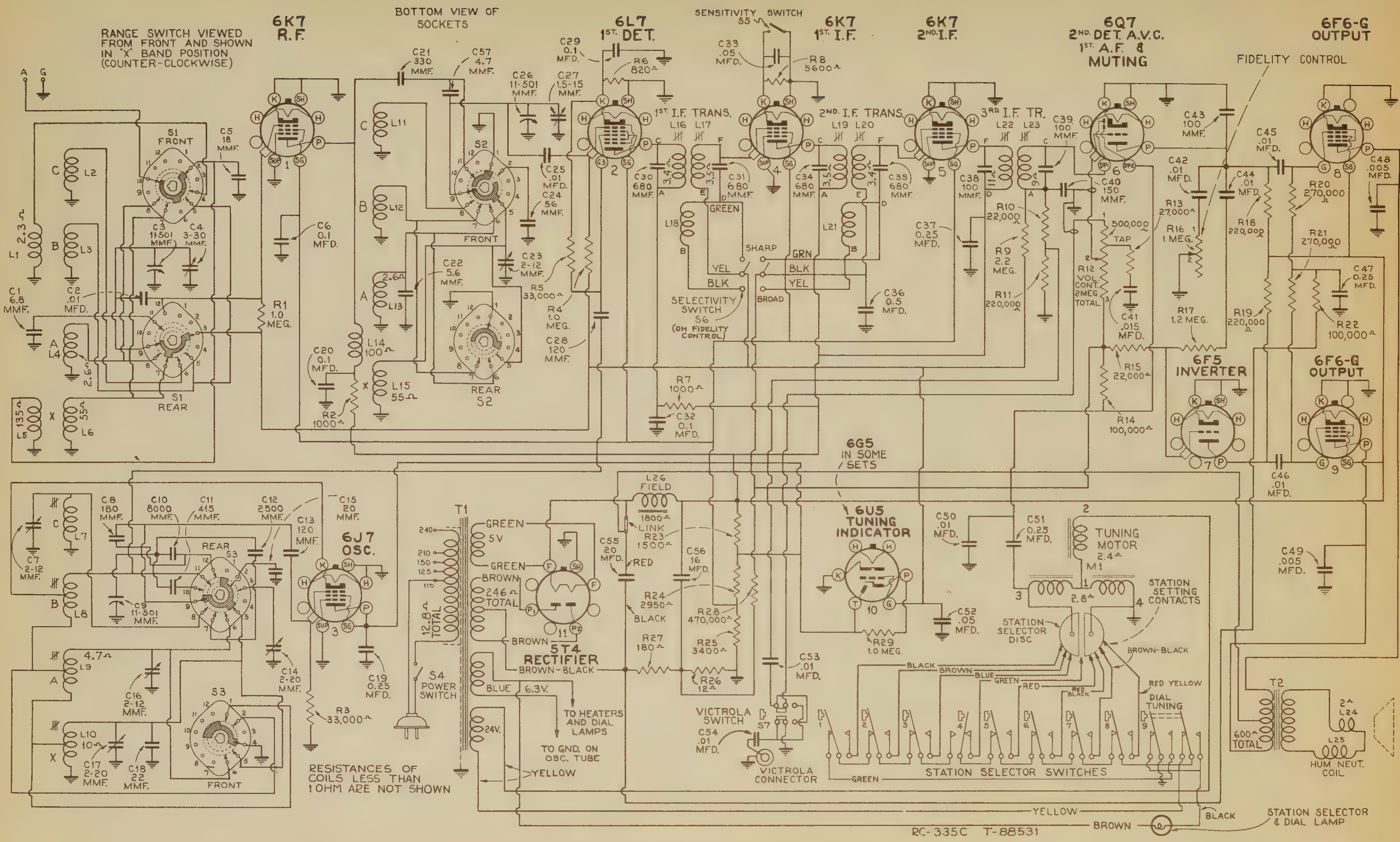


R-F Wiring Diagram and Socket Voltages, Models 11Q4 and 11QK

Model 11QU is the same, except for the Victrola connections, which are shown in a separate diagram

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at minimum (opened), and volume control at minimum. Values should hold within approximately ±20% with 110-volt a-c supply.

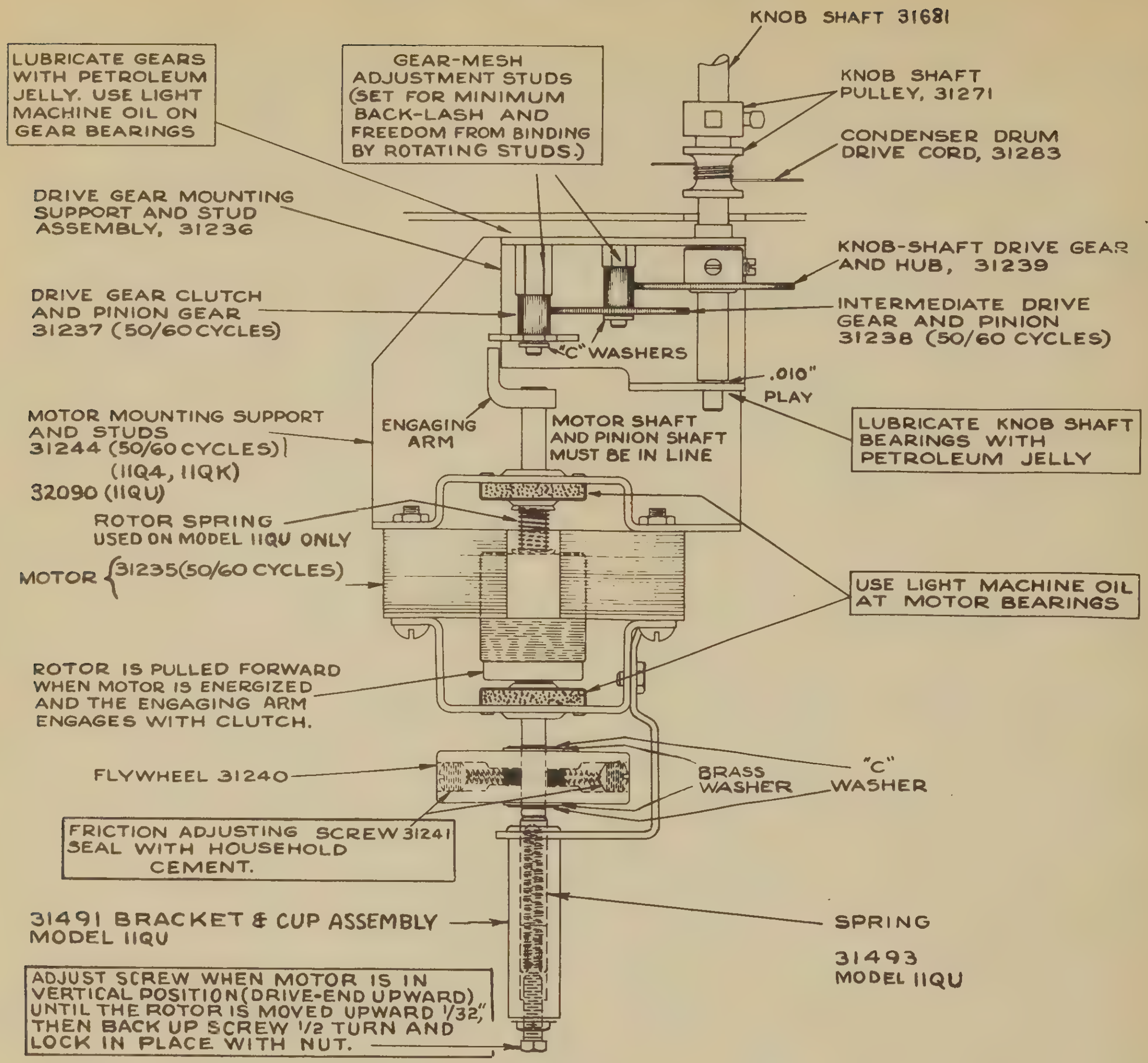
* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Schematic Diagram, Models 11Q4 and 11QK

Model 11QU is the same, except for the Victrola connections, which are shown in a separate diagram

Electric Tuning Mechanism


KNOB SHAFT 31681
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES)
"C" WASHERS
.010" PLAY
MOTOR MOUNTING SUPPORT AND STUDS 31244 (50/60 CYCLES) (11Q4, 11QK) 32090 (11QU)
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING USED ON MODEL 11QU ONLY
MOTOR {31235(50/60 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
31491 BRACKET & CUP ASSEMBLY MODEL 11QU
SPRING 31493 MODEL 11QU
ADJUST SCREW WHEN MOTOR IS IN VERTICAL POSITION (DRIVE-END UPWARD) UNTIL THE ROTOR IS MOVED UPWARD 1/32," THEN BACK UP SCREW 1/2 TURN AND LOCK IN PLACE WITH NUT.

Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Oscillation of Tuning Mechanism

The principal of operation necessitates that the mechanism go through several quick reversals on arriving at the desired station frequency and before reaching a dead stop. Three of four reversals are normal. The number of reversals and consistency of operation depends mainly on the flywheel friction adjustment, however, in some cases the selector disc and station setting contacts are involved. The following suggestions may be helpful where excessive pointer oscillation is experienced.

Oscillation on Certain Buttons Only

(1) Check contact tip of selector assembly for loose fit in body. See that nose of contact is not burned nor distorted out of correct shape. Replace tip if necessary; do not attempt to file the tips.

(2) Clean the insulating gap of selector disc, being sure to remove all metal particles and metallic fragments from beveled edges of the brass. Each contact should be checked to assure that clearance exists (approx.

.010-in) between it and the disc when stopped in position on the station.

(3) Inspect the insulating gap to see that it has not changed shape due to bending or warping. Replace the disc if cleaning and adjustment fail to give correct operation.

Oscillation On All Buttons

(1) Slow oscillation indicates friction adjustment of flywheel is too tight. Loosen set screw in flywheel slightly.

(2) Rapid oscillation indicates friction adjustment is too loose. Tighten set screw in flywheel slightly.

(3) If definite adjustment cannot be reached, remove spring from behind flywheel set screw and increase its length by stretching; replace and make the necessary adjustments. Install a new spring if necessary.

(4) See that leather friction pad is not binding in its hole, and that it is saturated with lubricant. "Neats-Foot" oil should be used for this purpose.

(5) Incorrect balance of the flywheel sometimes prevents correct adjustment. The standard service replacement flywheel Stock No. 31240 may be used to definitely eliminate this cause.

(6) The number of oscillations varies somewhat with line voltage.

(7) Stability of adjustment is slightly better if made after a brief run-in period.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the beveled operating-end at the left (viewed from rear).

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

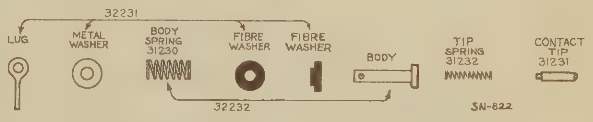
Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. If desired one of the other seven station buttons on the set may be used in place of No. 1 button.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.



Component Parts of Station Setting Contact

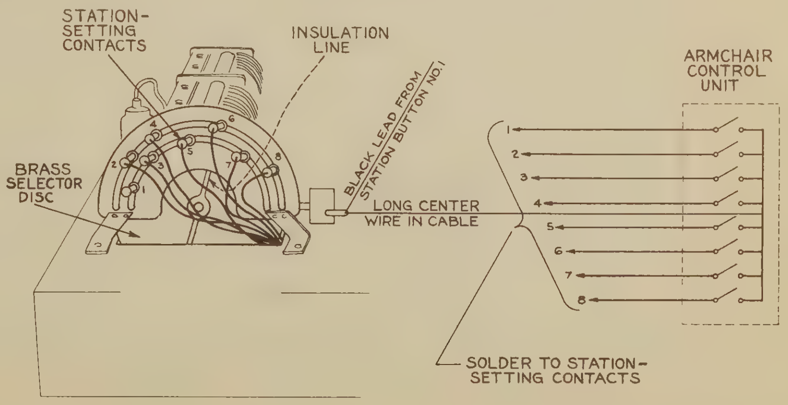
ADJUSTMENTS FOR ELECTRIC TUNING

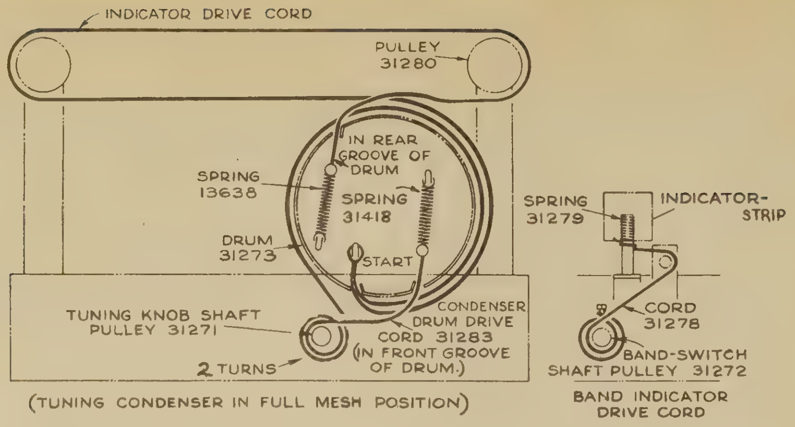
1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go completely out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

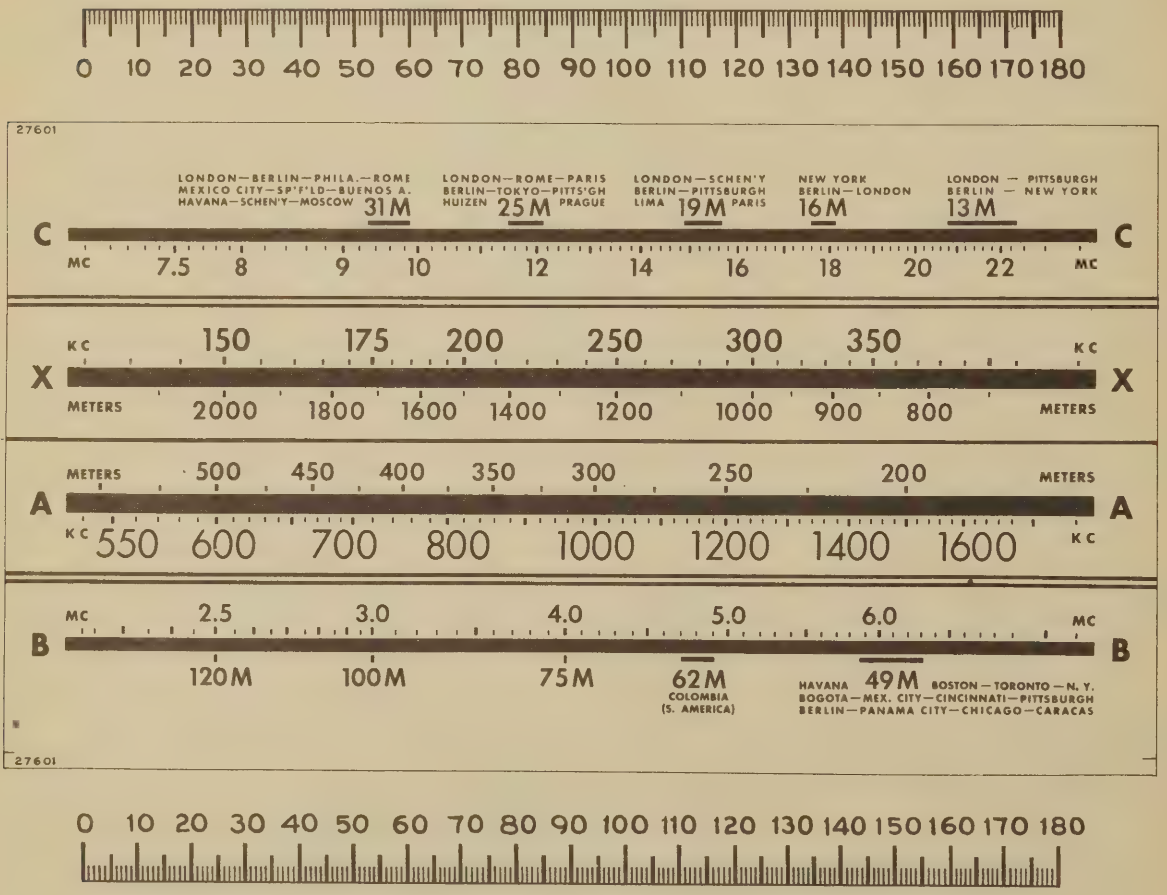
Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow


STATION-SETTING CONTACTS
INSULATION LINE
BLACK LEAD FROM STATION BUTTON NO. 1
ARMCHAIR CONTROL UNIT
BRASS SELECTOR DISC
LONG CENTER WIRE IN CABLE
SOLDER TO STATION-SETTING CONTACTS
1
2
3
4
5
6
7
8


INDICATOR DRIVE CORD
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
SPRING 31279
INDICATOR-STRIP
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
2 TURNS
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
(TUNING CONDENSER IN FULL MESH POSITION)
BAND INDICATOR DRIVE CORD

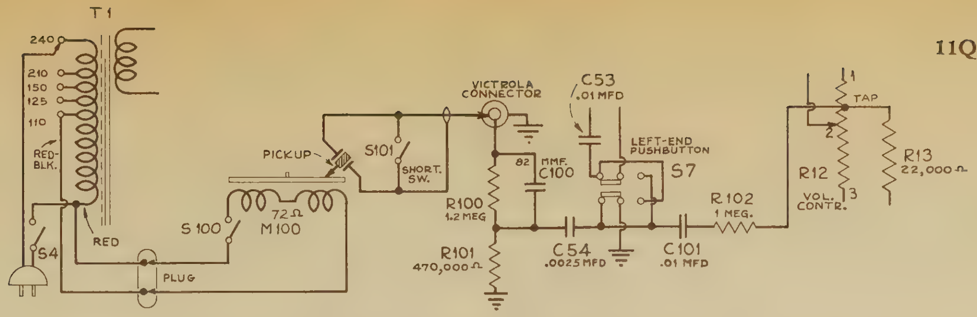
Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Calibration Scale


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
27601
LONDON—BERLIN—PHILA.—ROME MEXICO CITY—SP'F'LD—BUENOS A. HAVANA—SCHEN'Y—MOSCOW 31M
LONDON—ROME—PARIS BERLIN—TOKYO—PITTS'GH HUIZEN 25M PRAGUE
LONDON—SCHEN'Y BERLIN—PITTSBURGH LIMA 19M PARIS
NEW YORK BERLIN—LONDON 16M
LONDON — PITTSBURGH BERLIN — NEW YORK 13M
C
MC 7.5 8 9 10 12 14 16 18 20 22 MC
KC 150 175 200 250 300 350 KC
X
METERS 2000 1800 1600 1400 1200 1000 900 800 METERS
METERS 500 450 400 350 300 250 200 METERS
A
KC 550 600 700 800 1000 1200 1400 1600 KC
MC 2.5 3.0 4.0 5.0 6.0 MC
B
120M 100M 75M 62M COLOMBIA (S. AMERICA)
HAVANA 49M BOSTON—TORONTO—N. Y. BOGOTA—MEX. CITY—CINCINNATI—PITTSBURGH BERLIN—PANAMA CITY—CHICAGO—CARACAS
27601
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 151.5° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."



Model 11QU Victrola Input Circuit

Except for the changes shown above, the schematic diagram of Model 11QU is the same as Models 11Q4 and 11QK

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31492	Bearing—Variable condenser motor rotor adustment—less bracket and cup assembly—Model 11QU	
31863	Board—Antenna and ground terminal board—Models 11Q4 and 11QK only	
31867	Board—Antenna and ground terminal board—Model 11QU only	
32232	Body—Comprising 1 plunger body and 1 body spring	
31276	Bracket—Band indicator mounting, complete except less band indicating strip, cord, and tension spring	
31491	Bracket—Bracket and cup assembly for variable condenser motor rotor adjustment bearing—Model 11QU	
31282	Bracket—Magic Eye mounting bracket and clip	
30766	Cap—Rubber cap for Magic Eye	
12714	Capacitor—Trimmer 2-12 mmfd. (C7, C16, C23)	
12884	Capacitor—Trimmer 2-20 mmfd. (C14, C17)	
14392	Capacitor—4.7 mmfd. (C57)	
12814	Capacitor—5.6 mmfd. (C22)	
14079	Capacitor—6.8 mmfd. (C1)	
12722	Capacitor—18 mmfd. (C5)	
31871	Capacitor—20 mmfd. (C15)	
31868	Capacitor—22 mmfd. (C18)	
12723	Capacitor—56 mmfd. (C24)	
12813	Capacitor—82 mmfd. (C100) — Model 11QU only	
31270	Capacitor—100 mmfd. (C38, C39)	
12720	Capacitor—100 mmfd. (C43)	
12724	Capacitor—120 mmfd. (C13, C28)	
12725	Capacitor—150 mmfd. (C40)	
31869	Capacitor—180 mmfd. (C8)	
12952	Capacitor—330 mmfd. (C21)	
31870	Capacitor—415 mmfd. (C11)	
31552	Capacitor—680 mmfd. (C30, C31, C34, C35)	
31703	Capacitor—2,500 mmfd. (C12)	
31704	Capacitor—8,000 mmfd. (C10)	
5107	Capacitor—.0025 mfd. (C54) — Model 11QU only	
4838	Capacitor—.005 mfd. (C48, C49)	
14393	Capacitor—.01 mfd. (C2, C25, C42, C44, C45, C46, C50, C53, C54, C101)—(C54—Models 11Q4 and 11QK only, C101—Model 11QU only)	
11315	Capacitor—.015 mfd. (C41)	
4886	Capacitor—.05 mfd. (C52, C33)	
4839	Capacitor—0.1 mfd. (C6, C20, C29, C32)	
12484	Capacitor—0.25 mfd. (C19, C37, C47, C51)	
30867	Capacitor—0.5 mfd. (C36)	
5212	Capacitor—16 mfd. (C56)—Models 11Q4 and 11QK only	
31866	Capacitor—16 mfd. (C56)—Model 11QU only	
31495	Capacitor—20 mfd. (C55)	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft	
31257	Coil—"A" band oscillator coil (L9)	
31690	Coil—"B" band oscillator coil (L8)	
31839	Coil—"B" and "C" bands antenna coil (L1, L2, L3)	
31841	Coil—"B" and "C" bands r-f coil (L11, L12)	
31255	Coil—"C" band oscillator coil (L7)	
31837	Coil—"X" band oscillator coil (L10)	
31838	Coil—"X" and "A" bands antenna coil (L4, L5, L6)	
31840	Coil—"X" and "A" bands r-f coil (L13, L14, L15)	
31842	Condenser—3-gang variable tuning condenser (C3, C4, C9, C26, C27)	
31231	Contact—Contact tip for selector plunger	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip	
31278	Cord—Band indicator drive cord	
31281	Cord—Indicator pointer drive cord — Models 11Q4 and 11QK only	
31554	Cord—Indicator pointer drive cord — Model 11QU only	
31283	Cord—Variable condenser drum drive cord	
31273	Drum—Variable condenser drive cord drum	
31546	Fidelity control and selectivity switch (R16, S6)	
31240	Flywheel—Variable condenser drive motor flywheel	
31238	Gear—Variable condenser intermediate drive gear and pinion gear	
31239	Gear—Variable condenser knob shaft drive gear and hub	
31819	Indicator—Band indicator strip—Models 11Q4 and 11QK only	
31862	Indicator—Band indicator strip—Model 11QU only	
11891	Lamp—Dial lamp or pilot lamp	
31480	Lamp—Electric Tuning adjustment indicator lamp	
31243	Leather—Friction leather for flywheel	
31346	Lockplate—Push button switch lockplate—comprising 10-contact locks in one strip	
31235	Motor—Variable condenser drive motor (M1)	
14028	Nut—Jamb nut for trimmer Stock Nos. 12714 and 12884	
31228	Plate—Selector contact plate—less plungers	
31227	Plate—Selector mounting plate and studs—mounts on rear of variable condenser	
31280	Pulley—Indicator pointer drive cord pulley	
31272	Pulley—Range switch pulley	
31271	Pulley—Station selector knob shaft pulley	
30868	Plug—2-contact female plug for motor power cable	
12493	Plug—5-contact female plug for speaker cable	
31250	Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 182 ohm sections (R23, R24, R25, R26, R27)	
11895	Resistor—820 ohms, 1/10 watt (R6)	
14837	Resistor—1,000 ohms, 1/10 watt (R2, R7)	
31789	Resistor—5,600 ohms, 1/10 watt (R8)	
14284	Resistor—22,000 ohms, 1/10 watt (R15)	
13998	Resistor—22,000 ohms, ¼ watt (R10, R13)—R13 Model 11QU only	
12738	Resistor—27,000 ohms, ¼ watt (R13)—Models 11Q4 and 11QK only	
11300	Resistor—33,000 ohms, 1/10 watt (R3, R5)	
11281	Resistor—100,000 ohms, 1/10 watt (R14, R22)	
11398	Resistor—220,000 ohms, 1/10 watt (R18, R19)	
12264	Resistor—220,000 ohms, ¼ watt (R11)	
11453	Resistor—270,000 ohms, 1/10 watt (R20, R21)	
11452	Resistor—470,000 ohms, 1/10 watt (R28)	
12285	Resistor—470,000 ohms, ¼ watt (R101)—Model 11QU only	
12013	Resistor—1 meg., 1/10 watt (R1, R4, R29)	
13730	Resistor—1 meg., ¼ watt (R102)—Model 11QU only	
31056	Resistor—1.2 meg., 1/10 watt (R17)	
30208	Resistor—1.2 meg., ¼ watt (R100) — Model 11QU only	
12679	Resistor—2.2 meg., ¼ watt (R9)	
14887	Retainer—Indicator pointer drive cord pulley retainer	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser rotor shaft	
31241	Screw—¼ x 20 headless, cone point set screw for motor flywheel	
5042	Screw—No. 8-32 headless set screw for pulley Stock No. 31271	
31611	Screw—No. 8-32 headless set screw for gear Stock No. 31239	
14350	Screw—No. 8-32 square head set screw for selector rotor disc	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31273, and pulley Stock No. 31272	
31681	Shaft—Variable condenser drive knob shaft	
31364	Socket—Dial or pilot lamp socket	
31365	Socket—Insulated lamp socket for Electric Tuning adjustment indicator lamp	
13871	Socket—Magic Eye socket	
31347	Socket—Pickup input socket and bracket	
31251	Socket—Tube socket	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
13638	Spring—Indicator pointer drive cord tension spring	
31493	Spring—Variable condenser motor rotor adjustment bearing spring—Model 11QU	
31232	Spring—Selector plunger tip spring	
31230	Spring—Selector plunger body spring	
31279	Spring—Tension spring for band indicator	
31970	Spring—Tension spring for push button switch latch bar	
31242	Spring—Tension spring for motor flywheel	
31418	Spring—Variable condenser drum drive cord tension spring	
31236	Support—Variable condenser drive gear mounting support and studs	
31244	Support—Variable condenser motor mounting support and studs—Models 11Q4 and 11QK only	
32090	Support—Variable condenser motor mounting support and studs—Model 11QU only	
31360	Switch—Pickup switch for mounting on push button switch (S7)	
31835	Switch—Range switch (S1, S2, S3)	
31312	Switch—Station selector push button switch and bracket assembly complete	
30953	Switch—S.P.S.T. sensitivity switch (S5)	
31308	Transformer—Power transformer 105-130, 140-160, 195-250 volts, 50-60 cycles (T1)	
31864	Transformer—First i-f transformer (L16, L17, L18, C30, C31)	
31865	Transformer—Second i-f transformer (L19, L20, L21, C34, C35)	
31268	Transformer—Third i-f transformer (L22, L23, C38, C39)	
31836	Volume Control and power switch (R12, S4)	
32231	Washer—Comprising 1 metal washer, 2 fibre washers and 1 solder lug or retainer for station selector plunger	

MOTORBOARD ASSEMBLIES
Model 11QU Only

STOCK No.	DESCRIPTION	
31149	Base—Pickup arm mounting base	
14209	Bumper—Main lever rubber bumper	
9848	Cup—Used needle cup and lid complete	
31148	Escutcheon—Index escutcheon	
31873	Escutcheon—Speed regulator escutcheon	
31151	Guide—Pickup lift cable guide	
31150	Mounting—Pickup arm base rubber mounting	
31155	Spring—Needle cup lid tension spring	

OPERATING MECHANISM
Model 11QU Only

STOCK No.	DESCRIPTION	
31134	Bracket—Pickup locating lever mounting bracket (3)	
31144	Cam—Cam and gear assembly (4)	
6808	Clutch—Trip lever friction clutch assembly (5)	
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	
31129	Cover—Cap for top of record post	
31116	Finger—Trip lever friction finger assembly (7)	
31119	Gear—Long arm and rack gear for front left-hand record post (8)	
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	
31121	Gear—Record post gear (10)	
31123	Guide—Main lever spring guide (11)	
31114	Lever—Index lever assembly (12)	
31137	Lever—Index lever tension spring lever (13)	
31138	Lever—Locating lever and pawl assembly (14)	
31113	Lever—Main lever assembly (15)	
31140	Lever—Pickup lift cable lever and spring assembly (16)	
31135	Lever—Pickup locating lever assembly (17)	
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	
31132	Lever—Trip detaining lever (19)	
31115	Lever—Trip lever assembly (20)	
31131	Lever—Trip regulator lever (21)	
31133	Pawl—Trip pawl assembly (22)	
31124	Pin—Record post drive pin (23)	
14207	Roller—Pickup lift cable roller and bracket assembly (24)	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅝-in. O.D., ¾-in. lg.)	
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	
14191	Sprng—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set of rubber strips for flexible coupling	
31874	Turntable Assembly—less spindle	
31128	Washer—"C" washer for top of record post	
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	

MOTOR ASSEMBLIES
Model 11QU Only

STOCK No.	DESCRIPTION	
11703	Governor—Motor speed governor	
31876	Motor—105-125 volts, 50-60 cycles (M100)	
30870	Plug—2-contact male plug for motor power cable	
31877	Pointer—Motor speed regulator pointer and arm	
31158	Screw—Complete set of motor mounting screws, washers, and spacers	
14206	Switch—Motor toggle switch (S100)	

PICKUP AND ARM ASSEMBLIES
Model 11QU Only

STOCK No.	DESCRIPTION	
31162	Cable—Pickup arm lift cable and clips	
31156	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	

SPEAKER ASSEMBLIES
Model 11Q4 Only
(Speaker RL63J-2)

STOCK No.	DESCRIPTION	
31825	Cap—Speaker cone center dust cap	
11469	Coil—Hum neutralizing coil (L25)	
11234	Coil—Speaker field coil (L26)	
31310	Cone—Speaker cone and voice coil (L24)	
31539	Plug—5-contact male plug for speaker	
31829	Speaker complete	
14534	Transformer—Output transformer (T2)	

SPEAKER ASSEMBLIES
Models 11QK and 11QU Only
(Speaker RL70H-4)

STOCK No.	DESCRIPTION	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L26)	
11469	Coil—Neutralizing coil (L25)	
31275	Cone—Speaker cone and voice coil (L24)	
31539	Plug—5-contact male plug for speaker	
31538	Speaker complete (RL70H-4)	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	

MISCELLANEOUS ASSEMBLIES

STOCK No.	DESCRIPTION	
31358	Button—Station selector push button	
13103	Cap—Pilot lamp cap (bullseye)—Model 11QU only	
31286	Carriage—Indicator pointer carriage — Models 11Q4 and 11QK only	
31456	Cover—Celluloid covers (8) for push button markers	
31541	Cushion—Motor plate mounting cushion and clamp assembly (sufficient for one instrument) —Model 11QU only	
31963	Dial—Dial scale—Models 11Q4 and 11QK only	
31964	Dial—Dial scale—Model 11QU only	
31362	Escutcheon—Dial escutcheon less dial scale, and push buttons—Models 11Q4 and 11QK only	
31561	Escutcheon—Dial escutcheon less dial scale, and push buttons—Model 11QU only	
30698	Hinge—Cabinet lid hinge—Model 11QU only	
31564	Holder—Needle card holder—Model 11QU only	
31284	Indicator—Dial indicator pointer—Models 11Q4 and 11QK only	
31717	Indicator—Dial indicator pointer, carriage, and clip assembly—Model 11QU only	
31355	Knob—Tuning, volume control, tone control, or range switch knob	
31458	Marker—"Dial Tuning" push button marker	
31589	Marker—Station call letter markers	
31457	Marker—"Victrola" push button marker	
30868	Plug—2-contact female plug for speaker cable	
30870	Plug—2-contact male plug for speaker cable	
31285	Screen—Dial color screen and light diffuser—Models 11Q4 and 11QK only	
31559	Screen—Dial color screen and light diffuser—Model 11QU only	
31287	Shaft—Indicator pointer carriage shaft	
31558	Spring—Indicator pointer carriage spring stop	
14270	Spring—Retaining spring for knob Stock No. 31355	
31478	Support—Cabinet lid support—Model 11QU only	
31470	Suspension — Motorboard suspension springs, screw, and lockwasher (4 Reqd.) — Model 11QU only	

RCA Victor

MODELS 12Q4, 12QK, and 12QU

Chassis No. RC-338 RC-338 RC-338A

Twelve-Tube, Eight-Band, Radios and Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

Long Wave ("X" Band)	150-400 kc (2,000-750 m)	49 Meter Spread Band	5.92-6.23 mc
Medium Wave ("A" Band)	530-1,625 kc (566-184.6 m)	31 Meter Spread Band	9.48-9.70 mc
Short Wave 1 ("B" Band)	2.3-7.0 mc (130-42.8 m)	25 Meter Spread Band	11.68-11.94 mc
Short Wave 2 ("C" Band)	7.0-22 mc (42.8-13.6 m)	19 Meter Spread Band	15.08-15.39 mc

INTERMEDIATE FREQUENCY .... 455 kc

RADIOTRON COMPLEMENT

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6J7	Oscillator
(3)	RCA-6L7	1st Detector
(4)	RCA-6K7	1st I-F Amplifier
(5)	RCA-6K7	2nd I-F Amplifier
(6)	RCA-6R7	2nd Det., A.V.C., and 1st A-F Amplifier
(7)	RCA-6J5	2nd A-F Amplifier
(8)	RCA-6J5	Phase Inverter
(9)	RCA-6F6	Power Output
(10)	RCA-6F6	Power Output
	RCA-5U4-G (In PSU 10A, 10B, 10C A-C power supply unit)*	Rectifier
	RCA-5T4 (In PSU 10E D-C power supply unit) (For use with 12Q4 or 12QK only)	Rectifier

PILOT LAMPS

Models 12Q4 and 12QK	One 6.3-volt, 0.15-amp., Mazda No. 47; two 6.3-volt, 0.25 amp., Mazda No. 44
Model 12QU	One 6.3-volt, 0.15-amp., Mazda No. 47; three 6.3-volt, 0.25 amp., Mazda No. 44

POWER OUTPUT RATING

Undistorted	10 watts
Maximum	12 watts

LOUDSPEAKER (RL-70H-3)

Type	12-inch electrodynamic
Voice Coil Impedance at 400 cycles	2.2 ohms

POWER SUPPLY RATINGS

A-C Ratings		12Q4, 12QK	12QU * Radio	12QU * Total
With PSU 10A Power Supply Unit	105-125 volts, 50-60 cycles	125 watts	125 watts	150 watts
With PSU 10B Power Supply Unit	105-125 volts, 25-60 cycles	125 watts		
With PSU 10C Power Supply Unit	105-130, 140-160, 200-250 volts, 50-60 cycles	125 watts	125 watts	150 watts

D-C Ratings

With PSU 10E Power Supply Unit........ 105-125, 210-250 volts D-C........ (See text for current consumption ratings)

* Model 12QU may be used with PSU 10A or 10C *only*.

Mechanical Specifications

PHONOGRAPH (Model 12QU only)

Type	Automatic
Record Capacity	Eight 10-inch or seven 12-inch
Turntable Speed	78 r.p.m. (adjustable)
Type Pickup	Crystal
Pickup Impedance	100,000 ohms at 1,000 cycles

	Model 12QU	Model 12QK	Model 12Q4
Height (inches)	36	35	22⅞
Width (inches)	39¼	35	20
Depth (inches)	16⅛	15	14
Weight (Net lbs.)	143	79½	45½

Chassis Dimensions (inches)	4 x 10½ x 14½
Tuning Drive Ratio	10-1, 50-1

Trademarks "Victrola," "Magic Eye," "Magic Brain," "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition
Printed in U. S. A.

General Description

Model 12QK is a twelve-tube, eight-band receiver mounted in a tropically treated Console Grand type cabinet. Features of design include: High Fidelity reproduction; spread bands for short-wave reception; magnetite core I-F and oscillator coils; temperature-compensated circuits; one R-F and two I-F amplifier stages; plug-in Victrola (record player) connection and Radio-Victrola switch; plug for extension speaker; fidelity and high-frequency tone control; low-frequency tone control; aurally-compensated volume control; improved automatic volume control; air core trimming condensers; sensitivity switch; separate power supply; convertible to either A-C or D-C operation; Magic Eye tuning tube; Magic Brain; two-speed vernier tuning; straight-line Overseas Dial; inverse feedback for low distortion; illuminated band indicator.

Model 12Q4 is a twelve-tube, eight-band receiver mounted in a deluxe, upright, Continental type, tropic-proof cabinet. Features of design are the same as those of the 12QK.

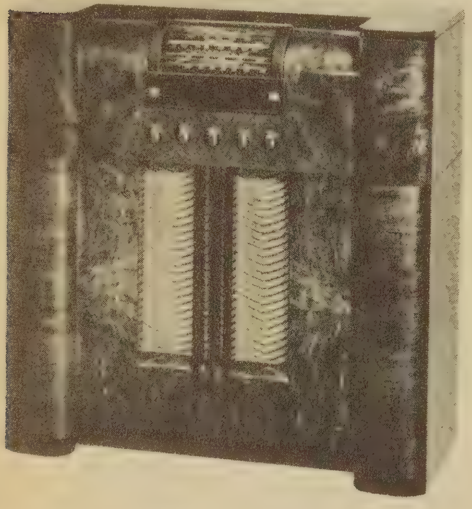
Model 12QU is a combination radio receiver and phonograph mechanism housed in a beautiful, modern style, tropic-proof cabinet. The radio receiver has the same features of design as those of the 12Q4 and 12QK. The phonograph mechanism is of a new design and may be operated either manually or automatically. In automatic operation, eight 10-inch or seven 12-inch records may be played in succession.

Phonograph features include: New gentle-action automatic record-changer mechanism; extended frequency-range; feather-touch crystal pickup with true-tracking tone arm; new top-loading needle socket and automatic needle cup; self-starting motor with flexible coupling drive; manual control-speed regulator; selective record ejector; duplex controls for Victrola and radio.

Because of the wide audio range of the High Fidelity instruments described above, proper operation of the controls is important for maximum satisfaction. The correct use of the fidelity and tuning controls insures the ultimate in radio entertainment. The function of each of the positions of the fidelity control is fully explained in the table.

On Model 12QU the fidelity control is also operative while records are being played, giving the desired fidelity control by changing the response characteristics of the audio amplifying system.

The power supply is built as a separate plug-in unit. Both a.c. and d.c. units are available as listed under "Power Supply Ratings" in the electrical specifications.



Model 12QK

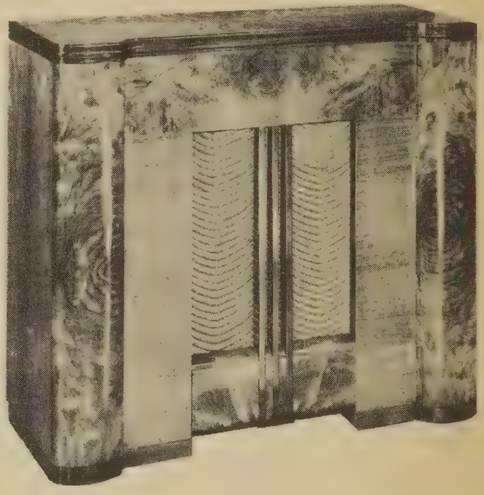
CONSOLE

12-inch Speaker

Model 12Q4

TABLE MODEL

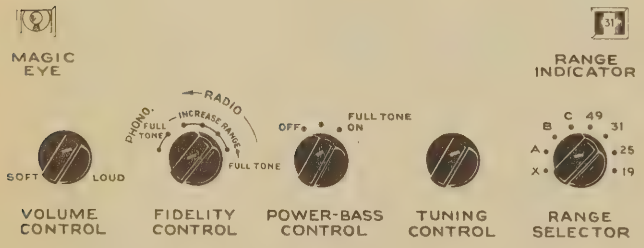
12-inch Speaker



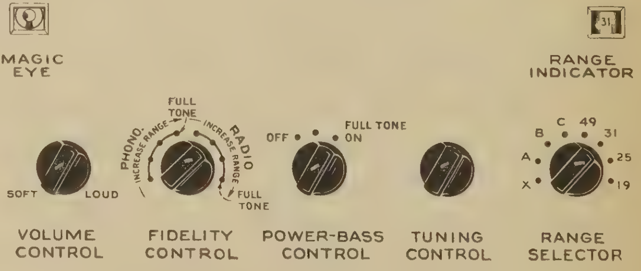
Model 12QU

AUTOMATIC VICTROLA

12-inch Speaker



Location of Controls, Models 12Q4 and 12QK



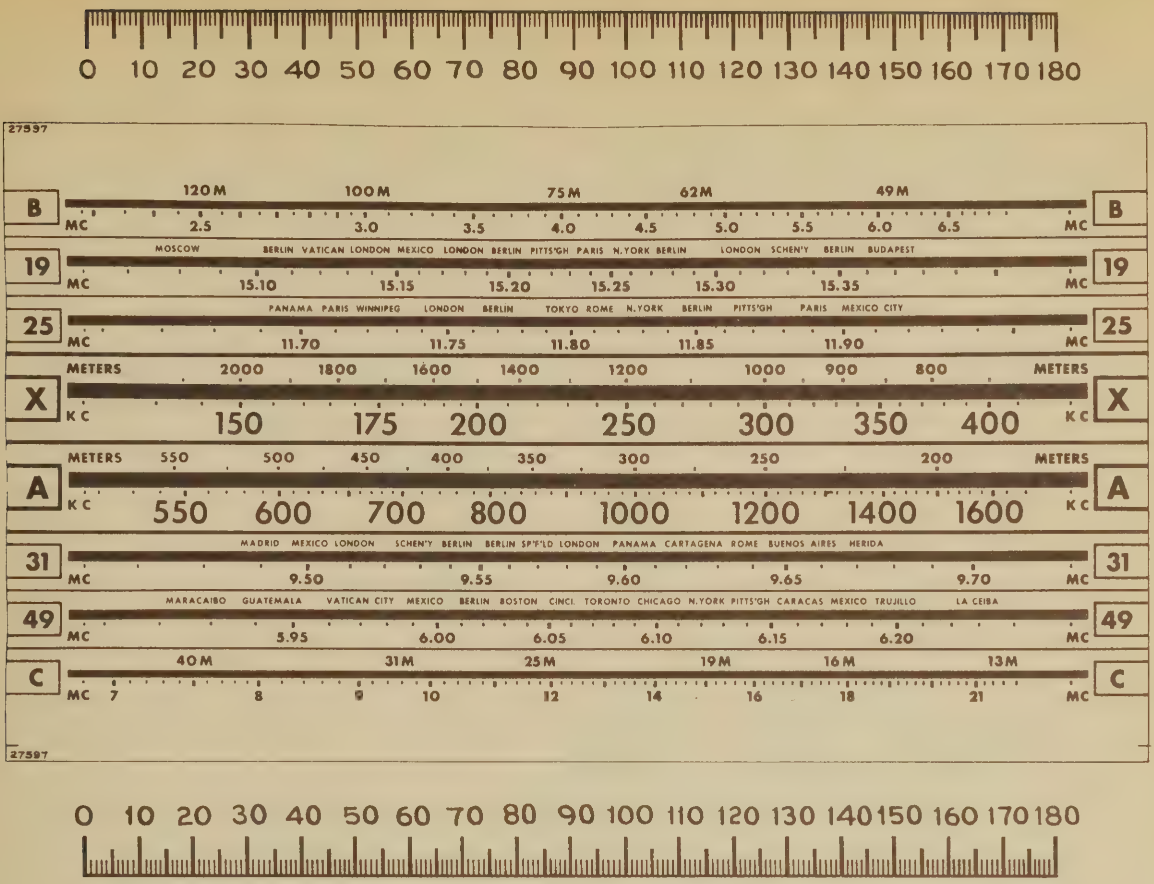
Location of Controls, Model 12QU

Power Supply Units

Models 12Q4, 12QK, and 12QU have seven-prong connectors for connection to a separate power supply unit. Units are available in different ratings for a.c. and d.c. operation, as listed under "Power Supply Ratings" in the electrical specifications. It should be noted, however, that Model 12QU may be used with a.c. units PSU 10A or 10C **only.**

When Model 12Q4 or Model 12QK is used with a d.c. Power Supply Unit, the measured current drain is 0.7 amperes from a 234 volt supply, and 1.4 amperes from a 117 volt supply. These current values may vary as much as 30% when measured by various types of ammeters, due to the rectangular wave-shape of the vibrator current.

Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets which should be referred to for further information.


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
27597
B 120M 100M 75M 62M 49M
MC 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 MC
MOSCOW BERLIN VATICAN LONDON MEXICO LONDON BERLIN PITTS'GH PARIS N.YORK BERLIN LONDON SCHEN'Y BERLIN BUDAPEST
19 MC 15.10 15.15 15.20 15.25 15.30 15.35 MC
PANAMA PARIS WINNIPEG LONDON BERLIN TOKYO ROME N.YORK BERLIN PITTS'GH PARIS MEXICO CITY
25 MC 11.70 11.75 11.80 11.85 11.90 MC
METERS 2000 1800 1600 1400 1200 1000 900 800 METERS
X KC 150 175 200 250 300 350 400 KC
METERS 550 500 450 400 350 300 250 200 METERS
A KC 550 600 700 800 1000 1200 1400 1600 KC
MADRID MEXICO LONDON SCHEN'Y BERLIN BERLIN SP'F'LD LONDON PANAMA CARTAGENA ROME BUENOS AIRES HERIDA
31 MC 9.50 9.55 9.60 9.65 9.70 MC
MARACAIBO GUATEMALA VATICAN CITY MEXICO BERLIN BOSTON CINCI. TORONTO CHICAGO N.YORK PITTS'GH CARACAS MEXICO TRUJILLO LA CEIBA
49 MC 5.95 6.00 6.05 6.10 6.15 6.20 MC
C 40M 31M 25M 19M 16M 13M
MC 7 8 9 10 12 14 16 18 21 MC
27597
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 158° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown illustrate the general shape of the i-f selectivity curves for different settings of the fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the bottom view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

Output Meter Alignment.—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 5 and 5A of alignment table. However, a listening check should be made to check operation of fidelity control, after receiver has been aligned.

Test Oscillator.—For all alignment operations connect the "Gnd" side of test oscillator to chassis, the high side as indicated in table, and keep output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end calibration marks on the dial scales, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on

this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

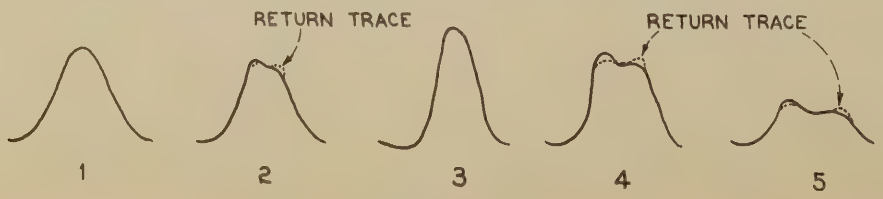
When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

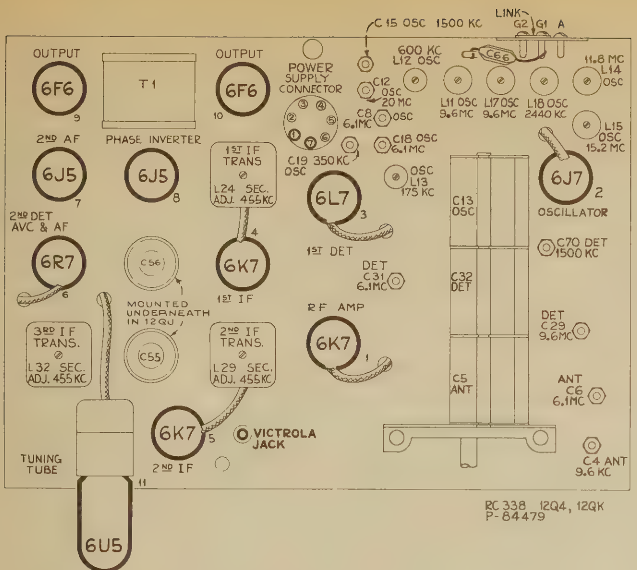
Using RCA Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the magic eye may be used as an output indicator for this unmodulated signal.

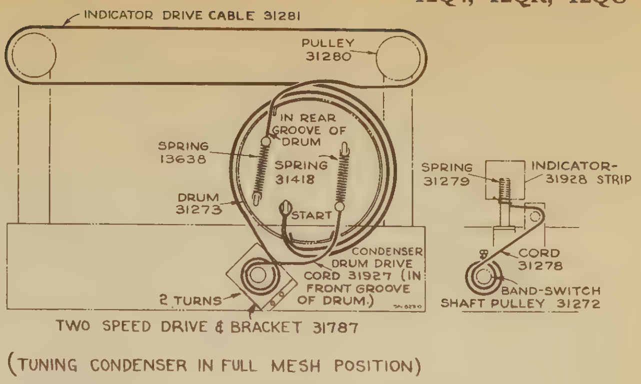
Alignment Table

Step	Connect high side of test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for maximum peak output	Check Selectivity Curve No.
1	Turn fidelity control to 3rd position from maximum clockwise, sensitivity switch min. (open)				
2	6K7 2nd I.F. grid cap in series with .01 mfd.	455 kc	"A" band Quiet Point between 550-750 kc	L31 and L32 3rd I-F Trans.	1
3	6K7 1st I.F. grid cap in series with .01 mfd.			L28 and L29 2nd I-F Trans.	2
4	6L7 1st-det. grid cap in series with .01 mfd.			L23 and L24 1st I-F Trans.	3
5	Turn fidelity control one position back from full clockwise				4
5A	Turn fidelity control full clockwise				5
6	Turn fidelity control to 3rd position from maximum clockwise for the following operations				
7	Antenna Terminal, in series with 200 mmf.	2,440 kc	"B" band 2.44 mc (16°)	L18 (osc.) †	
8	Antenna Terminal, in series with 300 ohms	6,100 kc	"B" band 6.1 mc (150°)	C18 (osc.) C31 (det.) ** C6 (ant.) **	* NOTE: In step 18 only, the oscillator tracks on low side of signal; use maximum capacity peak (plunger in) if two peaks can be obtained. All other oscillator adjustments use minimum inductance or capacity peak (plunger out), if two peaks can be obtained. ** Use maximum capacity peak if two can be obtained. † Before adjusting L18, set C18 so it projects approximately 2 inches above top of chassis. †† Before adjusting L11, set C12 so it projects approximately 2 inches above top of chassis.
9	Antenna Terminal, in series with 200 mmfd.	600 kc	"A" band 600 kc (36°)	L12 (osc.) Rock Gang	
10		1,500 kc	"A" band 1,500 kc (158°)	C15 (osc.) C70 (det.)	
11		600 kc	"A" band 600 kc (36°)	L12 (osc.) Rock Gang	
12		175 kc	"X" band 175 kc (54°)	L13 (osc.) Rock Gang	
13		350 kc	"X" band 350 kc (147°)	C19 (osc.)	
14		175 kc	"X" band 175 kc (54°)	L13 (osc.) Rock Gang	
15	Antenna Terminal, in series with 300 ohms	9,600 kc	"C" band 9.6 mc (58.5°)	L11 (osc.) ††	
16		20,000 kc	"C" band 20 mc (157°)	C12 (osc.)	
17		9,600 kc	"31M" band 9.6 mc (100°)	L17 (osc.) C29 (det.) C4 (ant.)	
18*		6,100 kc	"49M" band 6.1 mc (106°)	C8 (osc.)	
19		11,800 kc	"25M" band 11.8 mc (90°)	L14 (osc.)	
20		15,200 kc	"19M" band 15.2 mc (78°)	L15 (osc.)	



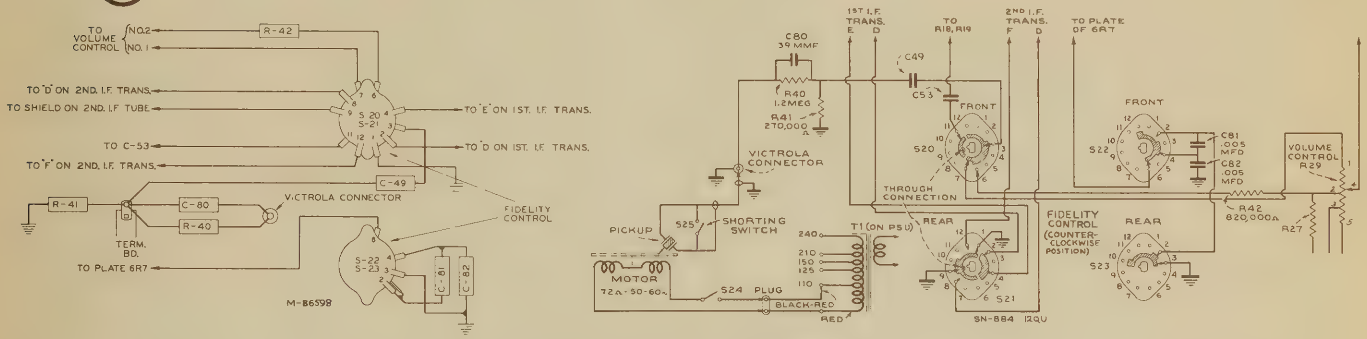
I-F Selectivity Curves




INDICATOR DRIVE CABLE 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
SPRING 31279
INDICATOR-31928 STRIP
CONDENSER DRUM DRIVE CORD 31927 (IN FRONT GROOVE OF DRUM.)
2 TURNS
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
TWO SPEED DRIVE & BRACKET 31787
(TUNING CONDENSER IN FULL MESH POSITION)

***Above**—Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

***At Left**—Location of Tubes and Trimmers*



Model 12QU Victrola Input Circuit

Except for the changes shown above, the schematic and wiring diagrams for Models 12Q4 and 12QK also apply to Model 12QU.

Purpose and Function of Fidelity Control

MODELS 12QK AND 12Q4

Position	For Use On	I-F Channel	Audio Channel
1 (Extreme Counter-clockwise)	Record Player	———	Min. highs
2	Record Player	———	Max. highs
3	Distant Stations	Sharp	Min. highs
4	Distant Stations	Sharp	Max. highs
5	Local and Medium Distant Stations	Medium	Max. highs
6 (Extreme Clockwise)	Local Stations	Broad	Max. highs

MODEL 12QU

Position	For Use On	I-F Channel	Audio Channel
1 (Extreme Counter-clockwise)	Victrola	———	Min. highs
2	Victrola	———	Medium No. 1
3	Victrola	———	Medium No. 2
4	Victrola	———	Max. highs
5	Distant Stations	Sharp	Min. highs
6	Distant Stations	Sharp	Max. highs
7	Local and Medium Distant Stations	Medium	Max. highs
8 (Extreme Clockwise)	Local Stations	Broad	Max. highs

Miscellaneous Service Data

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the output circuit on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended: With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

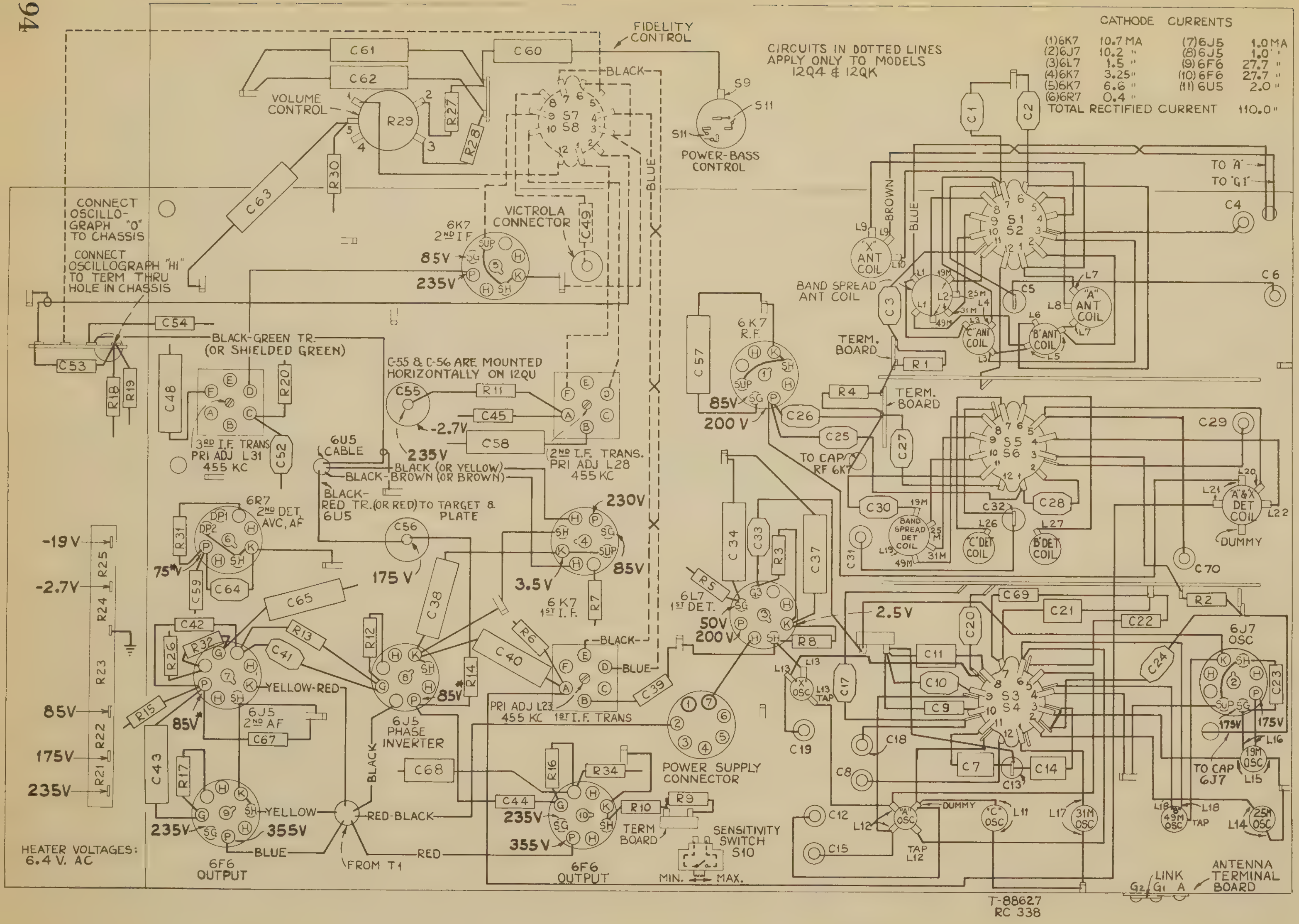
The RCA MI-6248 8-inch diameter Alnico permanent-magnet dynamic loudspeaker, which has a 2-ohm voice coil, and a power-handling capacity of 5 watts, is recommended. This speaker may be housed in the RCA MI-6292 sloping-front, walnut-finished wood housing.

The voice coil of the extension speaker should be connected by means of two-conductor cable, such as is used on electrical appliances, to the male plug. The cable may be any desired length, but with a long run, when using a low-impedance extension speaker, it is advisable to use heavy cable.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

Victrola Attachment (record player).—A jack located on the top near the front of the chassis is provided for connecting a Victrola Attachment (record player) into the audio amplifying circuit on Models 12Q4 and 12QK. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections.—Three terminals ("A," "G1," and "G2") are provided on the rear of the chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a d.c. power supply is used.



R-F Wiring Diagram and Socket Voltages, Models 12Q4 and 12QK

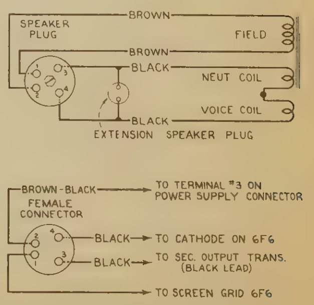
Model 12QU is the same except for the Victrola connections, which are shown in a separate diagram.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

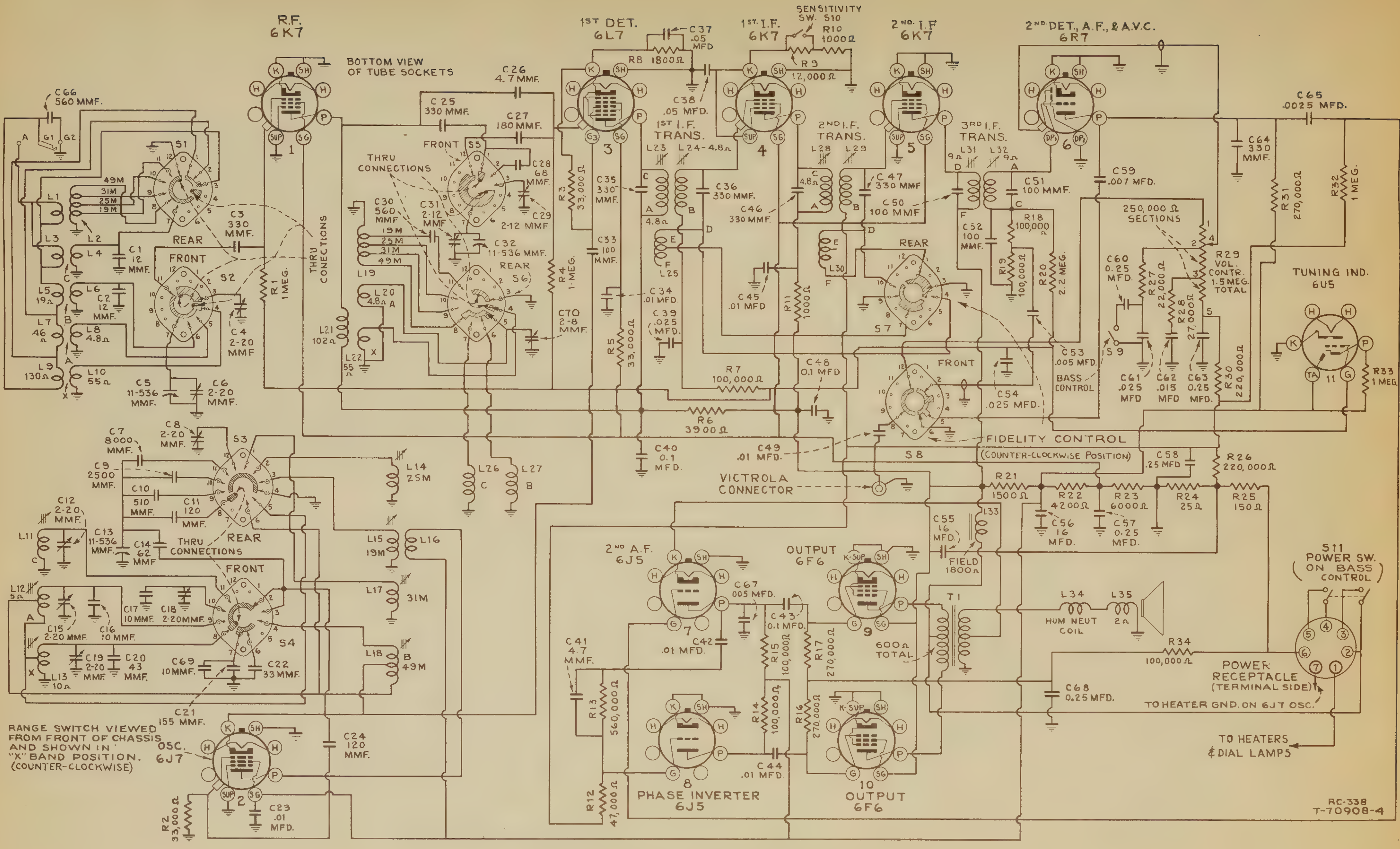
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum (closed), and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Precautionary Lead Dress.—

1. The following leads should be dressed away from other parts and chassis:
   a. All leads to the bottom of the tuning gang.
   b. All capacitor leads to oscillator section of range switch.
   c. Yellow lead from lug No. 10 on S4 to dummy lug on "A" oscillator coil.
   d. Yellow lead from pin No. 8 on 6J7 oscillator socket to terminal board.
   e. Yellow and green leads from "X" detector coil (should be dressed away from each other as well as other parts).
2. Dress all leads away from phono jack and C49.
3. Twisted leads of "B" oscillator coil must be soldered together within 1/4-inch of coil tube.
4. The brown, black, and blue leads in back of the oscillator coils should be dressed away from coil windings.
5. R13 and C41 must be dressed away from pin No. 7 of 6J5 (tube No. 7).



Connections of Loudspeaker and Cable



Schematic Diagram, Models 12Q4 and 12QK

Model 12QU is the same except for the Victrola connections, which are shown in a separate diagram.

The power supply units (PSU 10A, 10B, 10C, and 10E) for this receiver are described in separate service data sheets, which should be referred to for further information.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES
31815	Board—Antenna and ground terminal board—Models 12Q4 and 12QK only
31929	Board—Antenna and ground terminal board—Model 12QU only
31276	Bracket—Band indicator bracket complete less indicator strip, spring, and cord
31282	Bracket—Magic Eye mounting bracket and clip
31281	Cable—Indicator pointer drive cable
30766	Cap—Rubber cap for Magic Eye
12607	Cap—Top shield cap for i-f transformers
12807	Capacitor—Trimmer 2-8 mmfd. (C70)
12714	Capacitor—Trimmer 2-12 mmfd. (C29, C31)
12884	Capacitor—Trimmer 2-20 mmfd. (C4, C6, C8, C12, C15, C18, C19)
14392	Capacitor—4.7 mmfd. (C26, C41)
31709	Capacitor—10 mmfd. (C69)
13200	Capacitor—10 mmfd. (C16, C17)
13002	Capacitor—12 mmfd. (C1, C2)
31354	Capacitor—33 mmfd. (C22)
13545	Capacitor—39 mmfd. (C80)—Model 12QU only
31822	Capacitor—43 mmfd. (C20)
31349	Capacitor—62 mmfd. (C14)
13057	Capacitor—68 mmfd. (C28)
31270	Capacitor—100 mmfd. (C50, C51)
12720	Capacitor—100 mmfd. (C33, C52)
31706	Capacitor—120 mmfd. (C11)
12724	Capacitor—120 mmfd. (C24)
31708	Capacitor—155 mmfd. (C21)
13003	Capacitor—180 mmfd. (C27)
31756	Capacitor—330 mmfd. (C35, C36, C46, C47)
12952	Capacitor—330 mmfd. (C3, C25, C64)
30608	Capacitor—510 mmfd. (C10)
12537	Capacitor—560 mmfd. (C30, C66)
31703	Capacitor—2,500 mmfd. (C9)
31704	Capacitor—8,000 mmfd. (C7)
5107	Capacitor—.0025 mfd. (C65)
4838	Capacitor—.005 mfd. (C53, C67, C81, C82—C81, C82 in Model 12QU only)
5148	Capacitor—.007 mfd. (C59)—Models 12Q4 and 12QK only
14393	Capacitor—.01 mfd. (C23, C34, C42, C44, C45, C49)
11315	Capacitor—.015 mfd. (C62)
30938	Capacitor—.025 mfd. (C39, C54, C61)
4886	Capacitor—.05 mfd. (C37, C38)
4839	Capacitor—0.1 mfd. (C40, C43, C48)
12484	Capacitor—0.25 mfd. (C57, C58, C60, C63, C68)
5212	Capacitor—16 mfd. (C55, C56)
31845	Coil—"A" band antenna coil (L7, L8)
31257	Coil—"A" band oscillator coil (L12)
31891	Coil—"A" and "X" bands r-f coil (L20, L21, L22)
14949	Coil—"B" band antenna coil (L5, L6)
31890	Coil—"B" and 49-meter bands oscillator coil (L18)
14952	Coil—"B" band r-f coil (L27)
14950	Coil—"C" band antenna coil (L3, L4)
31255	Coil—"C" or 31-meter band oscillator coil (L11, L17)
14953	Coil—"C" band r-f coil (L26)
31892	Coil—"X" band antenna coil (L9, L10)
31812	Coil—"X" band oscillator coil (L13)
31852	Coil—19-meter band oscillator coil (L15, L16)
31254	Coil—25-meter band oscillator coil (L14)
14951	Coil—49, 31, 25, and 19-meter bands antenna coil (L1, L2)
31846	Coil—49, 31, 25, and 19-meter bands r-f coil (L19)
31843	Condenser—3-gang variable tuning condenser (C5, C13, C32)
31278	Cord—Band indicator drive cord
31927	Cord—Variable condenser drum drive cord
31787	Drive—Two-speed drive and mounting bracket
31273	Drum—Variable condenser drive drum
31928	Indicator—Band indicator strip
11891	Lamp—Dial lamp
31480	Lamp—Dial lamp (center)
14028	Nut—Jamb nut for capacitor, Stock Nos. 12714, 12884, and 12807
31817	Plate—Cushion socket mounting plate—less socket
5040	Plug—4-contact female plug for speaker cable
31788	Pulley—Two speed drive pulley
31280	Pulley—Indicator pointer cable pulley
31272	Pulley—Range switch shaft pulley
31851	Resistor—Voltage divider—comprising one 1,500-ohm, one 4,200-ohm, one 6,000-ohm, one 25-ohm, and one 150-ohm sections (R21, R22, R23, R24, R25)
14720	Resistor—1,000 ohms, ¼ watt (R10, R11)
31920	Resistor—1,800 ohms, 1/10 watt (R8)
12955	Resistor—3,900 ohms, ¼ watt (R6)
30128	Resistor—12,000 ohms, ¼ watt (R9)
13998	Resistor—22,000 ohms, ¼ watt (R27)
12738	Resistor—27,000 ohms, ¼ watt (R28)
12454	Resistor—33,000 ohms, ¼ watt (R2, R3, R5)
5132	Resistor—47,000 ohms, 1/10 watt (R12)
14560	Resistor—100,000 ohms, ¼ watt (R7, R14, R15, R18, R19, R34)
12264	Resistor—220,000 ohms, ¼ watt (R26, R30)
12199	Resistor—270,000 ohms, ¼ watt (R31, R41)—R41 in Model 12QU only
11453	Resistor—270,000 ohms, 1/10 watt (R16, R17)
12486	Resistor—560,000 ohms, ¼ watt (R13)
30963	Resistor—820,000 ohms, ¼ watt (R42)—Model 12QU only
12013	Resistor—1 meg., 1/10 watt (R32, R33)
13730	Resistor—1 meg., ¼ watt (R1, R4)
30208	Resistor—1.2 meg., ¼ watt (R40)—Model 12QU only
12679	Resistor—2.2 meg., ¼ watt (R20)
14887	Retainer—Pulley retainer
4669	Screw—No. 8-32 sq. hd. set screw for drum, Stock No. 31273, and pulley, Stock No. 31272 and Stock No. 31788
14404	Socket—7-contact male socket for power input
31364	Socket—Dial lamp socket
14278	Socket—Phonograph input socket
13871	Socket—Magic Eye socket
31251	Socket—Tube socket
31279	Spring—Band indicator tension spring
31418	Spring—Drum drive cord tension spring
13638	Spring—Indicator pointer drive cable tension spring
31849	Switch—Fidelity switch—Models 12Q4 and 12QK only (S7, S8)
31961	Switch—Fidelity switch (S20, S21, S22, S23)—Model 12QU only
31844	Switch—Range switch—less coils (S1, S2, S3, S4, S5, S6)
30953	Switch—S.P.S.T. sensitivity switch (S10)
31850	Tone and power switch (S9, S11)
31746	Transformer—First i-f transformer (L23, L24, L25, C35, C36)
31749	Transformer—Second i-f transformer (L28, L29, L30, C46, C47)
31268	Transformer—Third i-f transformer (L31, L32, C50, C51)
31847	Transformer—Output transformer (T1)
31848	Volume control (R29)
	MOTORBOARD ASSEMBLIES Model 12QU Only
31149	Base—Pickup arm mounting base
14209	Bumper—Main lever rubber bumper
9848	Cup—Used needle cup and lid complete
31148	Escutcheon—Index escutcheon
31873	Escutcheon—Speed regulator escutcheon
31151	Guide—Pickup lift cable guide
31150	Mounting—Pickup arm base rubber mounting
31155	Spring—Needle cup lid tension spring
	OPERATING MECHANISM Model 12QU Only
31134	Bracket—Pickup locating lever mounting bracket (3)
31144	Cam—Cam and gear assembly (4)
6808	Clutch—Trip lever friction clutch assembly (5)
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)
31129	Cover—Cap for top of record post
31116	Finger—Trip lever friction finger assembly (7)
31119	Gear—Long arm and rack gear for front left-hand record post (8)
31120	Gear—Short arm and rack gear for rear right-hand record post (9)
31121	Gear—Record post gear (10)
31123	Guide—Main lever spring guide (11)
31114	Lever—Index lever assembly (12)
31137	Lever—Index lever tension spring lever (13)
31138	Lever—Locating lever and pawl assembly (14)
31113	Lever—Main lever assembly (15)
31140	Lever—Pickup lift cable lever and spring assembly (16)
31135	Lever—Pickup locating lever assembly (17)
31130	Lever—Record separator elevating lever complete with adjustment screws (18)
31132	Lever—Trip detaining lever (19)
31115	Lever—Trip lever assembly (20)
31131	Lever—Trip regulator lever (21)
31133	Pawl—Trip pawl assembly (22)
31124	Pin—Record post drive pin (23)
14207	Roller—Pickup lift cable roller and bracket assembly (24)

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., .3-in. lg.)	
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅜-in. O.D., ¾-in. lg.)	
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in lg.)	
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set of rubber strips for flexible coupling	
31874	Turntable Assembly—less spindle	
31128	Washer—"C" washer for top of record post	
31143	Washers—Turntable thrust washers, (1 steel, 1 bronze, 1 felt)	
	MOTOR ASSEMBLIES Model 12QU Only	
11703	Governor—Motor speed governor	
31876	Motor—105-125 volts, 50-60 cycles (M1)	
30870	Plug—2-contact male plug for motor power cable	
31877	Pointer—Motor speed regulator pointer and arm	
31158	Screw—Complete set of motor mounting screws, washers, and spacers	
14206	Switch—Motor toggle switch (S24)	
	PICKUP AND ARM ASSEMBLIES Model 12QU Only	
31162	Cable—Pickup arm lift cable and clips	
31156	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	

STOCK No.	DESCRIPTION	
	SPEAKER ASSEMBLIES (Speaker RL70H-3)	
31825	Cap—Speaker cone center dust cap	
11469	Coil—Hum neutralizing coil (L34)	
11234	Coil—Speaker field coil (L33)	
31275	Cone—Speaker cone and voice coil (L35)	
31830	Plug—4-contact male plug for speaker	
31853	Speaker complete	
	MISCELLANEOUS ASSEMBLIES	
13103	Cap—Pilot lamp cap (bullseye)—Model 12QU only	
31541	Cushion—Motor plate mounting cushion and clamp assembly (sufficient for one instrument—Model 12QU only	
31962	Dial—Dial scale and crystal—Model 12QU only	
31855	Dial—Dial scale and crystal—Models 12Q4 and 12QK only	
31921	Escutcheon—Dial escutcheon less dial scale and crystal—Model 12QU only	
31854	Escutcheon—Dial escutcheon less dial scale and crystal—Models 12Q4 and 12QK only	
30698	Hinge—Cabinet lid hinge—Model 12QU only	
31564	Holder—Needle card holder—Model 12QU only	
31717	Indicator—Dial indicator pointer, carriage, and clip assembly—Model 12QU only	
31714	Indicator—Dial indicator pointer—Models 12Q4 and 12QK only	
31355	Knob—Station selector, volume control, tone control, range switch, or fidelity switch knob—Model 12QU only	
31802	Knob—Station selector, volume control, tone control, range switch, or fidelity switch knob—Models 12Q4 and 12QK only	
30868	Plug—2-contact female plug for speaker cable	
30868	Plug—2-contact female plug for motor power cable—Model 12QU only	
30870	Plug—2-contact male plug for speaker cable	
31287	Rod—Pointer carriage slide rod	
31559	Screen—Dial color screen and light diffuser—Model 12QU only	
31285	Screen—Dial color screen and light diffuser—Model 12Q4 and 12QK only	
31558	Spring—Pointer carriage stop spring	
14270	Spring—Retaining spring for knob, Stock Nos. 31355 and 31802	
11830	Support—Cabinet lid support—Model 12QU only	
31470	Suspension—Motorboard suspension springs, screw, and washer (4 required)—Model 12QU only	

RCA Victor

MODEL 86T6

Six-Tube, Electric-Tuning, Three-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 10—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,000 kc
"Short Wave" (C)	7,000-22,000 kc
Six Electric Tuning Positions	540-1,550 kc

R-F ALIGNMENT FREQUENCIES

"Medium Wave" (B)	6,000 kc (osc., ant.)
"Short Wave" (C)	20,000 kc (osc.)
"Standard Broadcast" (A)	600 kc (osc.), 1,500 kc (osc.)
Six Electric Tuning Positions	Desired Station (osc., ant.)

Intermediate Frequency	455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8-G	First Detector and Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6H6	Second Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6	Audio Power Amplifier
(6) RCA-5W4	Full-Wave Rectifier

Pilot Lamps (2)	Mazda No. 46, 6.3 volts, 0.25 amp.

POWER SUPPLY RATINGS

Rating A—105-125 volts, 50-60 cycles	75 watts
Rating B—105-125 volts, 25-60 cycles	75 watts
Rating C—100-130/200-250 volts, 50-60 cycles	75 watts

POWER OUTPUT

Undistorted	2.2 watts
Maximum	4.5 watts

LOUDSPEAKER

Type	6-inch Electrodynamic
Voice coil impedance at 400 cycles	2.5 ohms—84091—1 4.7 ohms—84091—2

Mechanical Specifications

Height	9⅝ inches
Width	18 inches
Depth	10 inches
Net Weight	18 pounds
Shipping Weight	22 pounds
Chassis Base Dimensions	7 inches x 9½ inches x 2½ inches
Over-all Chassis Height	7⅛ inches
Push-Button Assembly Dimensions	4¾ inches x 7 inches x 2 inches
Operating Controls	(1) Power Switch-Tone; (2) Tuning (large knob), Range Selector (small knob, left to right "Electric Tuning," "A," "B," and "C"); (3) Volume
Tuning Drive Ratio	20 to 1

General Description

This receiver employs a new three-band superheterodyne chassis. In addition, this receiver has Electric Push-Button Tuning for six stations on Standard Broadcast. The short wave bands cover all the international broadcast bands as well as the principal police, aircraft, and amateur channels.

Features of design include "Electric Tuning" with push buttons; magnetite cores in I-F transformers, in "Electric Tuning" oscillator coils, and for use in low-frequency oscillator tracking; automatic volume control; aurally compensated manual volume control; continuously-variable high-frequency tone control; phonograph terminal board; Class "A" pentode output system; dustproof electrodynamic loudspeaker; and a new straight-line, edge-illuminated dial.

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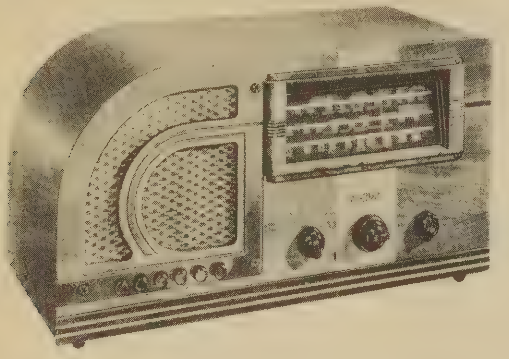
Circuit Arrangement

The circuit consists of a combined first detector and oscillator, I-F amplifier, diode second detector and A.V.C., audio voltage amplifier, Class "A" output pentode, and a full-wave rectifier.

Electric tuning is accomplished in a simple manner. There are six trimmers for tuning the "A" band antenna coil, and six magnetite-core adjusted oscillator coils located on a separate metal frame which mounts beneath the speaker. A desired station is tuned accurately, quickly, and silently by pressing a push-button which instantly puts the pre-adjusted coil and trimmer into use. Frequency drift is minimized by using a temperature-compensating condenser in the oscillator circuit in conjunction with magnetite-core oscillator coils.



Model 86T6

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Phonograph Attachment.—A terminal board is provided for connecting a phonograph into the audio amplifying circuit. RCA Victor Models R-93, R-93-A, R-93-2, or R-94 Record Players should be connected as follows: Open link between terminals 1 and 2 on terminal board. Connect yellow wire in Radio-Record switch cable to terminal 1, green to terminal 2, and shield extension to terminal 3. Tape unused red and blue leads separately. Connect a 2-conductor twisted cable between the Record Player binding posts and the screw terminals on Radio-Record switch.

Precautionary Lead Dress.—(1) 6F5 grid lead should be dressed away from adjacent electrolytic, C-12. (2) Leads from push-button socket on side apron must be twisted and dressed away from chassis. Maintain original length, size, and position of: (3) C-band antenna lead; (4) Antenna series condenser, C-1, lead; (5) C-band oscillator leads to range switch and chassis; (6) Oscillator plate lead to range switch.

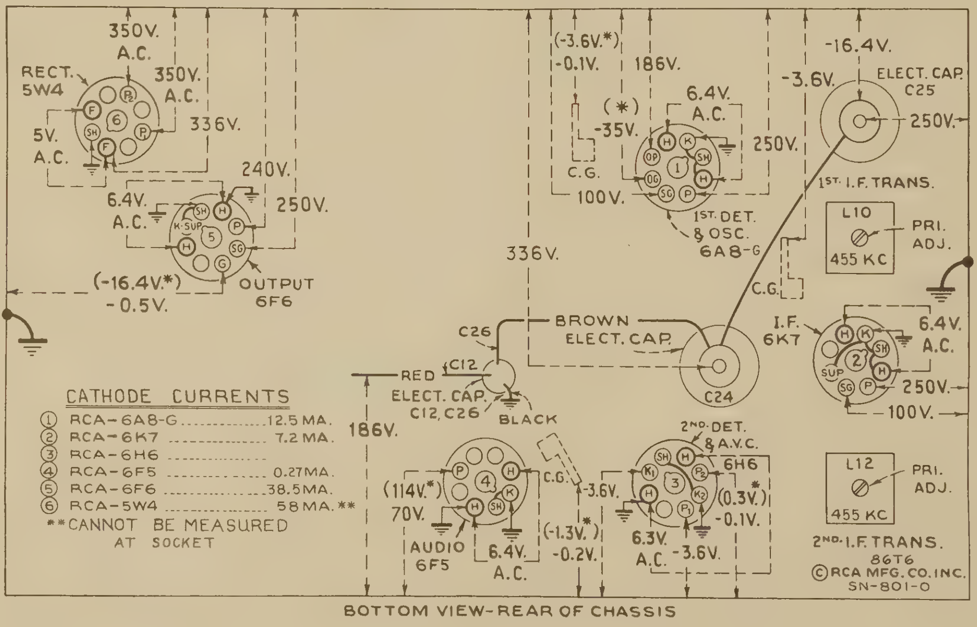


Figure 1—Radiotron Socket Voltages and Trimmer Locations

Measured at 117 volts, 60-cycle supply—Tuned to approximately 1,000 kc ("Standard Broadcast")—No signal being received—Volume control minimum—Tone control optional

Note: Two voltage values are shown for some readings. The value shown in parentheses with asterisk (*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter through the high series circuit resistance.

Voltage values as specified should hold within ±20% when the receiver is normally operative at its rated line voltage. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the specified measured voltage. A-c voltages were measured with a corresponding a-c meter.

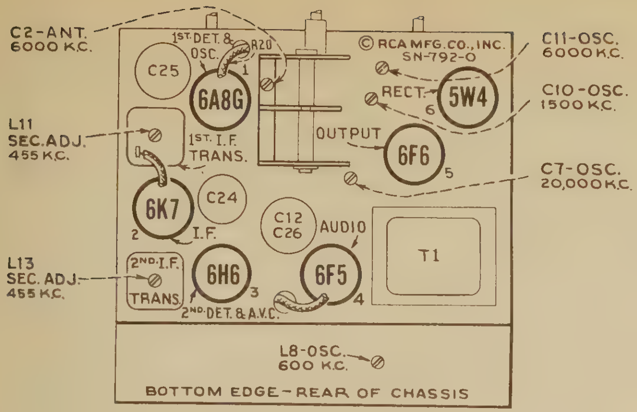


Figure 2—Radiotron, Component Part, and Trimmer Locations

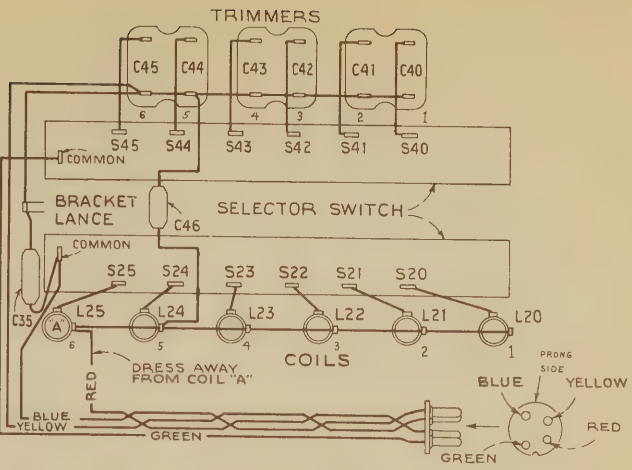


Figure 3—Wiring Diagram of Electric Tuning Unit

Alignment Procedure

With the gang tuning-condenser plates in full-mesh position, adjust the pointer to the low-frequency (end) calibration mark on the dial scale. The pointer is soldered in place on the drive cable.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 2.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 4. If an output indicator is used, connect it across the loudspeaker voice-coil. Advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver "G" (ground) terminal for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Adjustments for Electric Tuning

Each push-button connects a particular oscillator coil and antenna trimmer condenser. The tuning of this coil and this condenser selects a station. Clockwise rotation of cores or trimmer screws lowers frequency.

The frequency ranges for various push-buttons are:

No. 1 540 to 1,160 kc — Adjust L-20 and C-40.
No. 2 540 to 1,160 kc — Adjust L-21 and C-41.
No. 3 600 to 1,265 kc — Adjust L-22 and C-42.
No. 4 600 to 1,265 kc — Adjust L-23 and C-43.
No. 5 785 to 1,550 kc — Adjust L-24 and C-44.
No. 6 785 to 1,550 kc — Adjust L-25 and C-45.

The following are the steps in aligning a push-button selector:

Begin at low-frequency end of band, and tune selected sta-

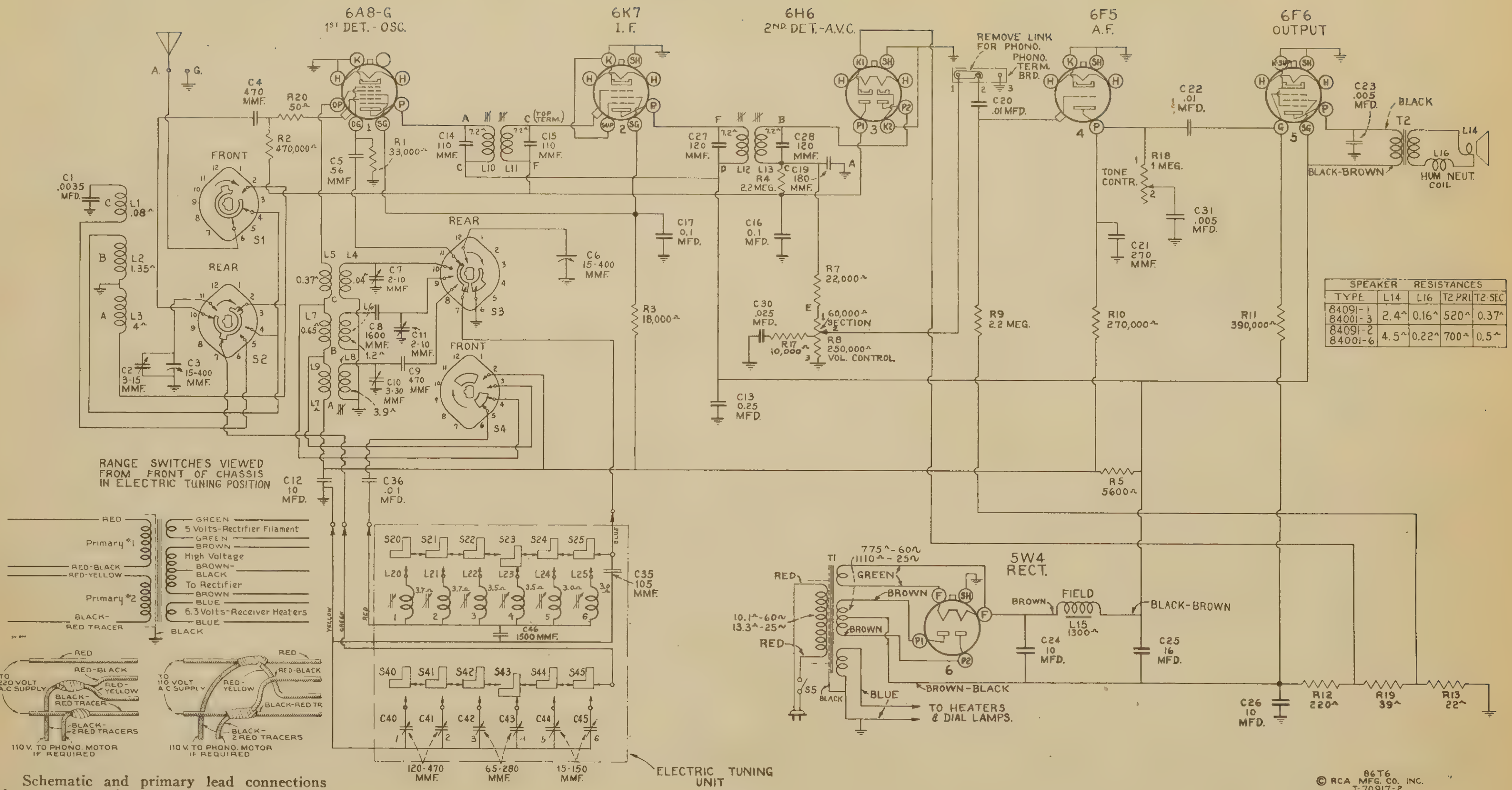
Order of Align-ment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting					
1	6K7 I-F Grid Cap	.001 Mfd.	455 kc	"A" Left	No Signal 550-750 kc	2nd I-F Trans.	L12 and L13	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	1st I-F Trans.	L10 and L11	Max. (peak)
3	Ant. Term.	300 Ohms	6,000 kc	"B" Center	6.0 mc	"B" Osc.	C11	Max. (peak)*
4	Ant. Term.	300 Ohms	6,000 kc	"B"	6.0 mc	"B" Ant.	C2	Max. (peak)†
5	Ant. Term.	300 Ohms	20,000 kc	"C" Right	20.0 mc	"C" Osc.	C7	Max. (peak)‡
6	Ant. Term.	200 Mmfd.	600 kc	"A"	600 kc	"A" L-F Osc.	L8	Max. (peak)
7	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)
8	Ant. Term.	200 Mmfd.	600 kc	"A"	600 kc	"A" L-F Osc.	L8	Max. (peak)
9	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)
10	Set up electric tuning as outlined under "Adjustments for Electric Tuning."							

*** Use minimum capacity peak if two peaks can be obtained.**

† After this adjustment, check for image signal by shifting receiver dial to 5.09 mc.

‡ Use maximum capacity peak if two peaks can be obtained. After this adjustment, check for image signal by shifting receiver dial to 20.91 mc.

Note that the heterodyne oscillator tracks above the signal frequency on bands "A" and "B," and below the signal frequency on band "C."



SPEAKER	RESISTANCES			
TYPE	L14	L16	T2 PRI.	T2·SEC
84091-1 84001-3	2.4Ω	0.16Ω	520Ω	0.37Ω
84091-2 84001-6	4.5Ω	0.22Ω	700Ω	0.5Ω

Schematic and primary lead connections for 110-220 volt power transformer (Stock No. 30607). Resistance of each primary winding, 10 ohms: High-voltage secondary winding, 386 ohms total.

Figure 5—Schematic Circuit Diagram

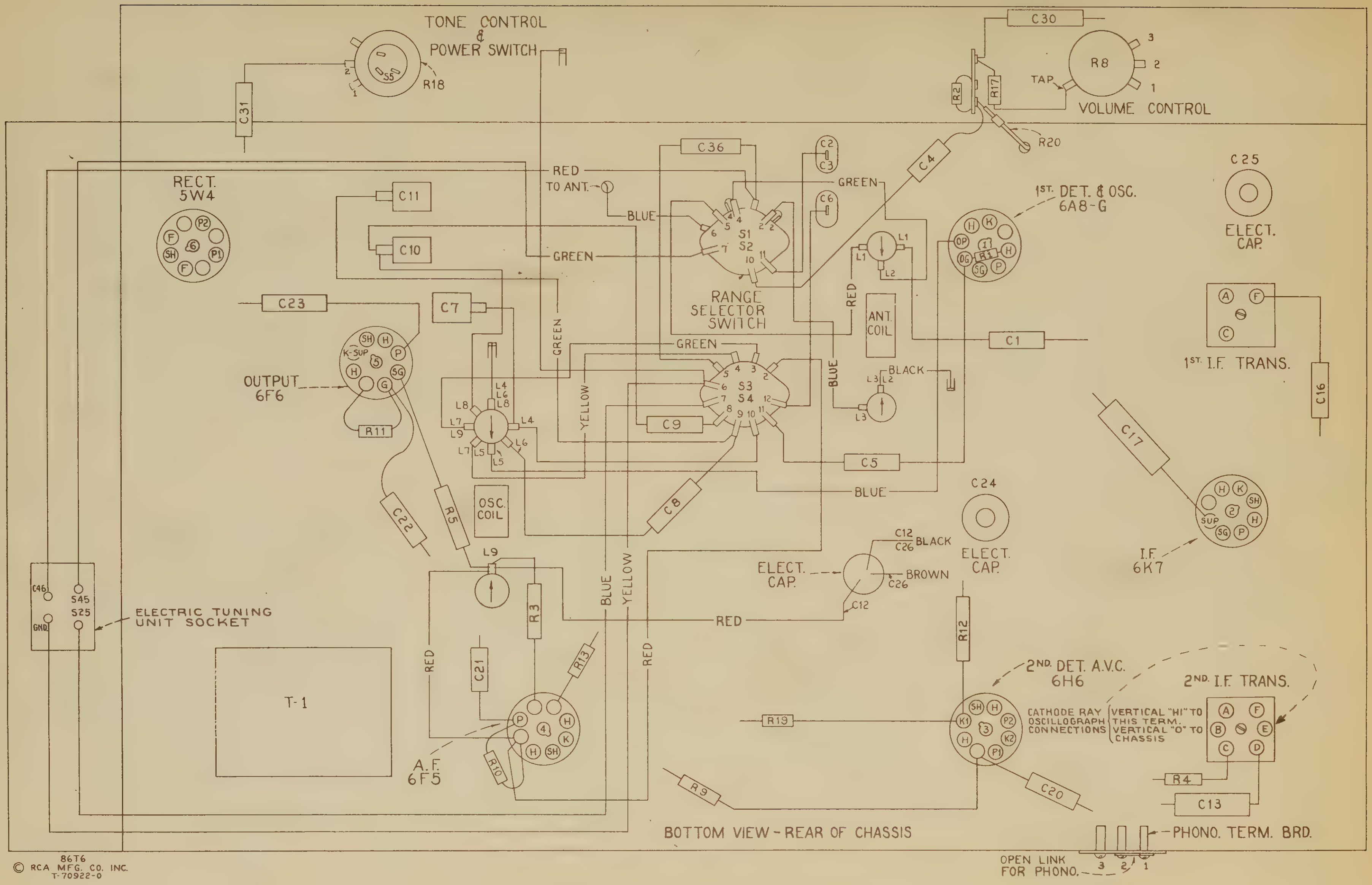


Figure 4—Component Part Locations and R-F Wiring Diagram

tions in the order that they would come on dial. Use one or two feet of wire as an antenna to ensure sharp peaking.

(1) Manually tune to desired station, then turn range selector to "Electric Tuning."

(2) Press a push-button whose frequency range includes the station.

(3) Adjust oscillator coil corresponding to that push-button, to receive the desired station. Screw core all the way in, to lowest frequency, then unscrew slowly until station is found.

(4) Adjust antenna condenser for that push-button, to receive the desired station with maximum volume.

(5) Check alignment by switching to manual tuning: Reception will not change appreciably if alignment is correct.

(6) Make a final careful adjustment of all magnetite cores and trimmers.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14380	Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft	
14352	Belt—Station selector drive belt	
13216	Board—Antenna and ground terminal board	
12717	Board—Phonograph terminal board	
12607	Cap—Top shield cap for first I.F. transformer	
12581	Cap—Top shield cap for second I.F. transformer	
11350	Cap—Grid contact cap	
12723	Capacitor—56 Mmfd. (C5)	
14262	Capacitor—110 Mmfd. (C14, C15)	
12404	Capacitor—120 Mmfd. (C27, C28)	
12406	Capacitor—180 Mmfd. (C19)	
12488	Capacitor—270 Mmfd. (C21)	
30433	Capacitor—470 Mmfd. (C4, C9)	
30592	Capacitor—1,600 Mmfd. (C8)	
30303	Capacitor—.0035 Mfd. (C1)	
4838	Capacitor—.005 Mfd. (C23, C31)	
14393	Capacitor—.01 Mfd. (C20, C22)	
4858	Capacitor—.01 Mfd. (C36)	
4870	Capacitor—.025 Mfd. (C30)	
4839	Capacitor—0.1 Mfd. (C16, C17)	
12484	Capacitor—0.25 Mfd. (C13)	
11203	Capacitor—10 Mfd. (C24)	
30577	Capacitor Pack—Comprising two sections each 10 Mfd. (C12, C26)	
5212	Capacitor—16 Mfd. (C25)	
4358	Clamp—Mounting clamp for capacitor pack, Stock No. 30577	
30578	Coil—Antenna coil (L1, L2, L3)	
30579	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9)	
30573	Condenser—2-gang variable tuning condenser (C2, C3, C6)	
30580	Condenser—3-gang mica trimmer—two sections each 2-10 Mmfd., one section 3-30 Mmfd. (C7, C10, C11)	
30586	Cord—Station-selector indicator pointer cord	
12800	Core—Adjustable core and stud for oscillator coil	
12006	Core—Adjustable core and stud for I.F. transformer	
30589	Dial—Station-selector dial scale	
31026	Disc—Band indicator disc, complete with operating hub and arm, and connecting link	
30572	Drive—Vernier drive shaft and pinion gear for variable condenser	
30584	Drum—Station-selector drive-cord drum with set screws	
30583	Indicator—Station-selector indicator pointer and holder assembly	
5226	Lamp—Dial lamp	
30587	Pulley—Drive-belt pulley for condenser shaft	
14636	Pulley—Drive-belt idler pulley	
14525	Resistor—22 ohms, carbon type, ¼ watt (R13)	
30590	Resistor—39 ohms, carbon type, ¼ watt (R19)	
30771	Resistor—50 ohms, flexible type, 1/10 watt (R20)	
30591	Resistor—220 ohms, insulated wire wound, 1.1 watt (R12)	
11298	Resistor—5,600 ohms, carbon type, 1 watt (R5)	
14559	Resistor—10,000 ohms, insulated, ¼ watt (R17)	
30151	Resistor—18,000 ohms, insulated, 1 watt (R3)	
14284	Resistor—22,000 ohms, carbon type, 1/10 watt (R7)	
12454	Resistor—33,000 ohms, insulated, ¼ watt (R1)	
11323	Resistor—270,000 ohms, carbon type, ¼ watt (R10)	
13005	Resistor—390,000 ohms, carbon type, 1/10 watt (R11)	
11452	Resistor—470,000 ohms, carbon type, 1/10 watt (R2)	
12679	Resistor—2.2 meg., insulated, ¼ watt (R4, R9)	
14887	Retainer—Band-indicator disc retainer	
14343	Ring—Retaining ring for range switch shaft	
14350	Screw—No. 8-32 x 3/16 in. square-head set screw for drum, Stock No. 30584, arm, Stock No. 14380, and pulley, Stock No. 30587	
14340	Shaft—Drive pulley and knob shaft—fastens on range switch shaft	
12008	Shield—I.F. transformer shield can	
11196	Socket—8-contact Radiotron socket	
31027	Socket—4-contact female socket for electric tuning unit cable plug	
14114	Socket—Dial-lamp socket	
12007	Spring—Retaining spring for core, Stock No. 12006	
30585	Spring—Tension spring for pointer cord	
30588	Spring—Tension spring for idler pulley	
31025	Switch—Range switch (S1, S2, S3, S4)	
30574	Tone control and power switch (R18, S5)	
14376	Transformer—First I.F. transformer (L10, L11, C14, C15)	
14308	Transformer—Second I.F. transformer (L12, L13, C19, C27, C28, R7)	
30571	Transformer—Power transformer, 105-125 volts, 25-60 cycle (T1)	
30607	Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycle (T1)	
30575	Volume Control (R8)	
	REPRODUCER ASSEMBLIES	
13677	Cone—Reproducer cone and dust cap (for speaker marked 84091-1 or 84001-3) (L14)	
14934	Cone—Reproducer cone and dust cap (for speaker marked 84091-2 or 84001-6) (L14)	
14613	Reproducer complete (marked 84001-3 or 6 but interchangeable with speaker marked 84091-1 or 2)	
14615	Transformer—Output transformer (for speaker marked 84091-1 or 84001-3) (T2)	
14935	Transformer—Output transformer (for speaker marked 84091-2 or 84001-6) (T2)	
	MISCELLANEOUS ASSEMBLIES	
30981	Button—Push button for electric tuning switch	
31029	Capacitor—Adjustable trimmer 15-150 Mmfd. (C44, C45)	
30764	Capacitor—Adjustable trimmer 65-280 Mmfd. (C42, C43)	
30765	Capacitor—Adjustable trimmer 120-470 Mmfd. (C40, C41)	
31032	Capacitor—105 Mmfd. (C35)	
13762	Capacitor—1,500 Mmfd. (C46)	
30747	Coil—Electric tuning oscillator coil (L24, L25)	
30748	Coil—Electric tuning oscillator coil (L22, L23)	
30749	Coil—Electric tuning oscillator coil (L20, L21)	
30846	Core—Adjustable core and stud for electric tuning oscillator coils	
31095	Discs—10 celluloid protector discs for call letter markers	
30593	Escutcheon—Dial escutcheon and crystal	
14359	Knob—Station selector knob	
14269	Knob—Tone control, volume control, or range switch knob	
31028	Marker—Station call letter markers for electric tuning push buttons	
30550	Plug—4-prong male plug for electric tuning unit cable	
14267	Screw—Chassis-mounting screw and washer assembly	
14270	Spring—Retaining spring for knob, Stock No. 14269	
4982	Spring—Retaining spring for knob, Stock No. 14359	
12007	Spring—Retaining spring for core, Stock No. 30846	
31030	Switch—Electric tuning station selector switch only—less push buttons (S20, S21, S22, S23, S24, S25, S40, S41, S42, S43, S44, S45)	

First Edition.

Printed in U. S. A.

RCA Victor

MODEL 95T

Five-Tube, Single-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 7—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range.......................... 540 to 1,750 kc
R-F Alignment Frequency............... 1,500 kc (osc., ant.)
Intermediate Frequency.............................. 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8.............................. First-Det., Osc.
(2) RCA-6K7............................ Intermediate Amp.
(3) RCA-6Q7-G.................. Second-Det., A-F, A.V.C.
(4) RCA-6K6-G........................... Power Output
(5) RCA-5Y3-G.................................. Rectifier

Dial lamp................ Mazda No. 46, 6.3 volts, 0.25 amps.

POWER OUTPUT (125-volt, a-c supply)

Undistorted .... 1.0 watt
Maximum .... 2.0 watts

LOUDSPEAKER

Type.................................. 5-inch Electrodynamic
Voice-coil Impedance.................. 3.4 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A................. 105-125 volts, 50-60 cycles, 50 watts
Rating B................. 105-125 volts, 25-60 cycles, 50 watts
Rating C.......... 105-125/200-250 volts, 50-60 cycles, 50 watts

	Height	Width	Depth
Cabinet Dimensions	8 inches	11 inches	5-15/16 in.
Chassis Base	2⅜ inches	10-1/16 in.	4⅝ inches

Over-all Chassis Height................................ 6⅞ inches
Weight (net).. 9⅛ pounds
Weight (shipping)................................... 10⅞ pounds
Operating Controls...... (1) Power Switch—Volume, (2) Tuning

Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output meter alignment. If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator. For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting dial. With gang condenser in full mesh, move dial pointer to coincide with horizontal lines. This is a friction adjustment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Transformer)
No. 2	6A8 1st-det. grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Transformer)
No. 3	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc (Top of "1" in 150)	C6* (oscillator) C3 (antenna)

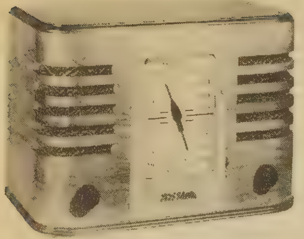
* Trimmer C18 on gang condenser should be screwed clockwise for maximum capacity before adjusting C6.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30892	Bracket—Station selector dial scale holder with indicator shaft and drive bearing assembly...	
11350	Cap—Grid connector cap..................	
12723	Capacitor—56 Mmfd. (C4)..................	
30904	Capacitor—100 Mmfd. (C7, C8, C9, C10)....	
13003	Capacitor—180 Mmfd. (C12)...............	
5107	Capacitor—.0025 Mfd. (C14)...............	
4858	Capacitor—.01 Mfd. (C13)..................	
11315	Capacitor—.015 Mfd. (C15)................	
4886	Capacitor—.05 Mfd. (C11)..................	
30899	Capacitor—0.1 Mfd. (C1)...................	
30898	Capacitor—Comprises two 5 Mfd. sections (C16, C17)	
30894	Coil—Antenna coil (L1, L2)...............	
30895	Coil—Oscillator coil (L3, L4).............	
30890	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C18)..................	
30877	Cord—Indicator drive cord................	
30905	Core—Adjustable core for I.F. transformers	
30893	Dial—Station selector dial scale and lamp bracket assembly.........................	
30896	Indicator—Station selector indicator pointer...	
5226	Lamp—Dial lamp..........................	
11361	Resistor—68 ohms, ¼ watt (R10)...........	
5164	Resistor—560 ohms, ½ watt (R9)...........	
8072	Resistor—33,000 ohms, ½ watt (R3).........	

STOCK No.	DESCRIPTION	
5029	Resistor—56,000 ohms, ¼ watt (R2).........	
12199	Resistor—270,000 ohms, ¼ watt (R7)........	
11172	Resistor—470,000 ohms, ¼ watt (R8)........	
12679	Resistor—2.2 Meg., ¼ watt (R4, R6)........	
14114	Socket—Dial lamp socket assembly...........	
11196	Socket—Radiotron socket....................	
30631	Spring—Indicator drive cord tension spring...	
30902	Transformer—First I.F. transformer (L5, L6, C7, C8)................................	
30903	Transformer—Second I.F. transformer (L7, L8, C9, C10)...............................	
30889	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1).........................	
30888	Transformer—Power transformer 110 and 220 volts, 50-60 cycle (T1)..................	
30891	Volume Control and power switch (R5, S1)...	
	REPRODUCER ASSEMBLIES (Speaker 84202-2)	
30940	Cone—Reproducer cone and voice coil (L9)...	
30939	Reproducer complete........................	
30941	Transformer—Output transformer (T2).......	
	MISCELLANEOUS ASSEMBLIES	
30901	Crystal—Station selector crystal.............	
30863	Knob—Station selector or power switch knob..	
30886	Screw—Chassis mounting screw and washer...	
30900	Spring—Retaining spring for knob Stock No. 30863	



Model 95T

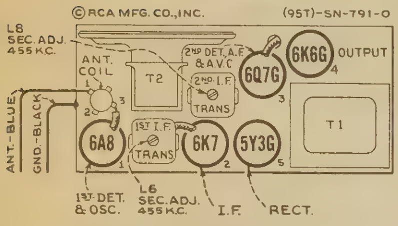


Figure 1—Radiotron and Trimmer Locations

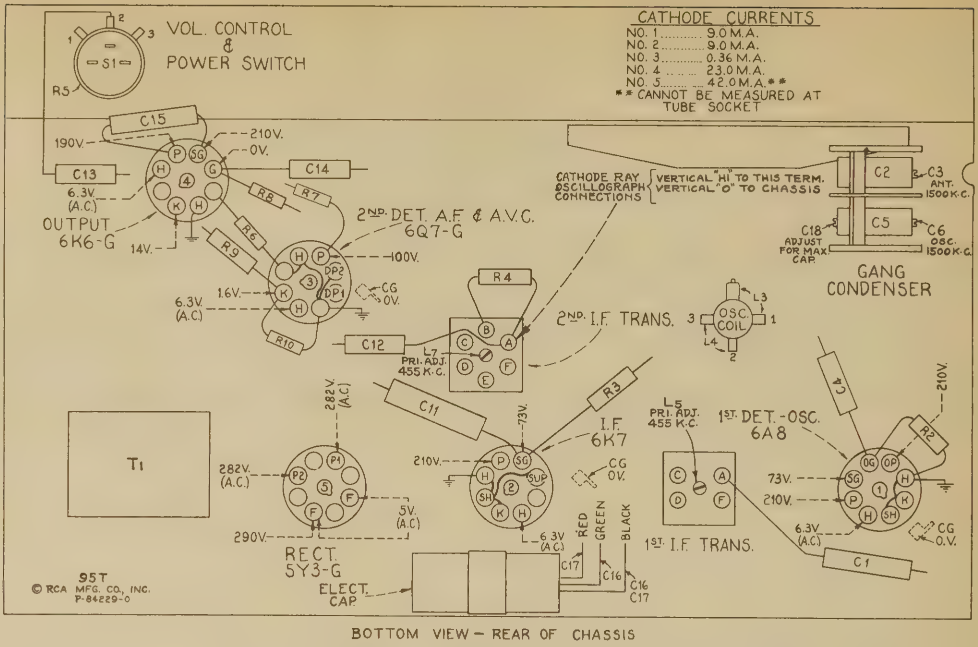


Figure 2—Radiotron Socket Voltages and Location of Parts

* Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

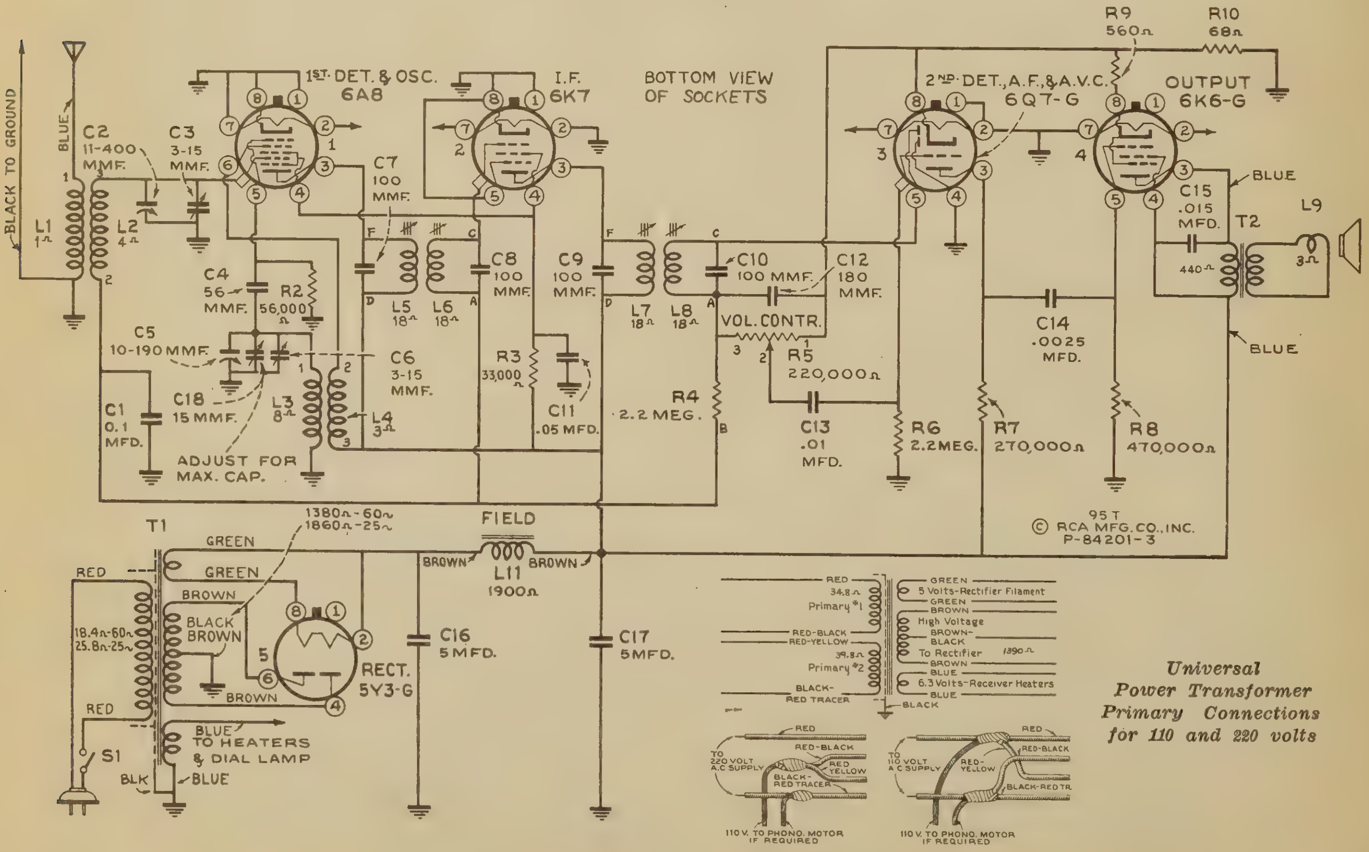
Precautionary Lead Dress

1. Keep lead from high side of volume control (contact 3) away from capacitor in plate circuit of output tube.
2. Keep dial lamp leads away from 6Q7-G grid lead.
3. Keep a-c leads away from volume-control wiring.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.



Universal Power Transformer Primary Connections for 110 and 220 volts

Figure 3—Schematic Circuit Diagram

First Edition

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Printed in U. S. A.

RCA Victor

MODELS 95T5, 96E, 96T and 96T1

Five- and Six-Tube, Electric-Tuning, Single-Band, A-C, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 26—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Range	540-1,720 kc

One Station between approximately 550-980 kc (Button No. 1—left)
Two Stations between approximately 650-1,080 kc (Buttons 2 and 3)
Two Stations between approximately 850-1,500 kc (Buttons 4 and 5)

R-F Alignment Frequency	1,500 kc (osc., ant.)
Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

Model 95T5		Models 96E, 96T, and 96T1	
(1) RCA-6A8-G	First Detector—Oscillator	(1) RCA-6A8-G	First Detector—Oscillator
(2) RCA-6K7	I-F Amplifier	(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7-G	Second Det., A.V.C., and A-F Amp.	(3) RCA-6H6	Second Det., and A.V.C.
(4) RCA-6K6-G	Power Output	(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-5Y3-G	Full-Wave Rectifier	(5) RCA-6K6-G	Power Output
		(6) RCA-5Y3-G	Full-Wave Rectifier

Pilot Lamp (1)	Mazda 44, 6.3 volts, .25 amp.

POWER OUTPUT	Model 95T5	Models 96E, 96T, 96T1
Undistorted	1.0 watts	2 watts
Maximum	1.5 watts	4 watts

POWER SUPPLY RATINGS			
Rating A	105-125 volts, 50-60 cycles	50 watts	75 watts
Rating B	105-125 volts, 25-60 cycles	50 watts	75 watts
Rating C	105-125/200-250 volts, 50-60 cycles	50 watts	75 watts

LOUDSPEAKER (ELECTRODYNAMIC)	95T5	96E	96T	96T1
Diameter (inches)	5	6	5	6
V. C. Impedance at 400 cycles (ohms)	3.1	2.6	5.0	2.6

Mechanical Specifications

Height (inches)	9⅜	21 5/32	9⅜	11¼
Width (inches)	11¾	21	12	15 13/16
Depth (inches)	6¼	13 7/32	6½	6⅞
Net Weight (pounds)	10¼	28	12	14
Shipping Weight (pounds)	13	36	15	17½

Chassis-Base Dimensions	11⅛ inches wide, 5 inches deep, 2⅞ inches high
Over-all Height	8 inches
Tuning Drive Ratio	6 to 1

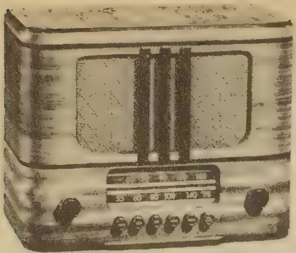
General Description

Model 95T5 is a five-tube superheterodyne. Models 96E, 96T, and 96T1 are six-tube superheterodynes. All of these models have push-buttons for electric-tuning of five stations in the standard-broadcast range, and one push-button for dial-tuning over the entire range of 540 to 1,720 kc.

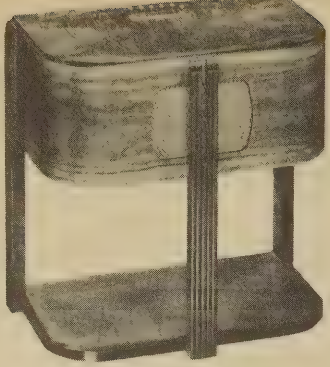
Features of design include magnetite-core i-f transformers, and magnetite-core electric-tuning oscillator coils; temperature-stabilized capacitor in the oscillator circuit; automatic volume control; electrodynamic loudspeaker, and edge-illuminated straight-line dial. The six-tube models have continuously-variable high-frequency tone control.

First Edition

Printed in U. S. A.

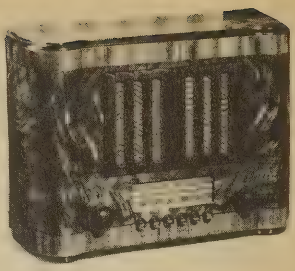


Model 95T5

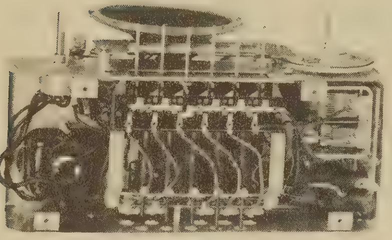


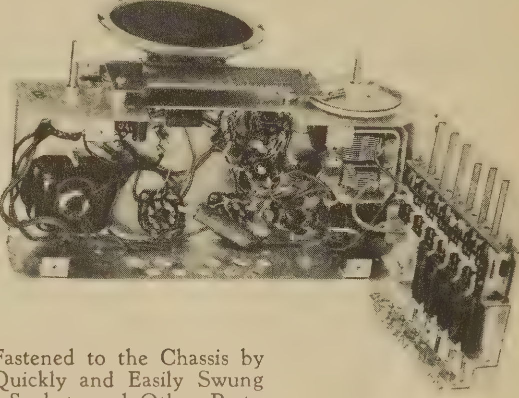
Model 96E

Model 96T

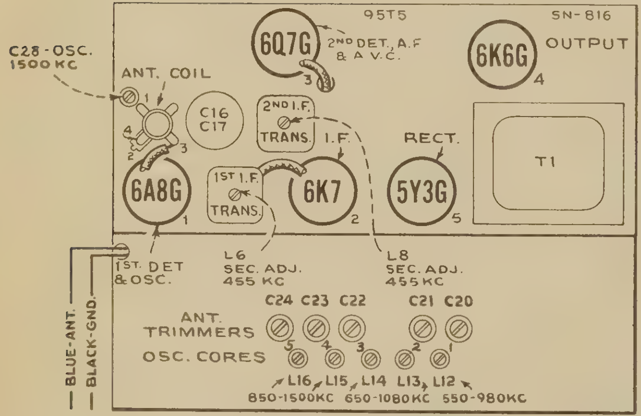


Model 96T1

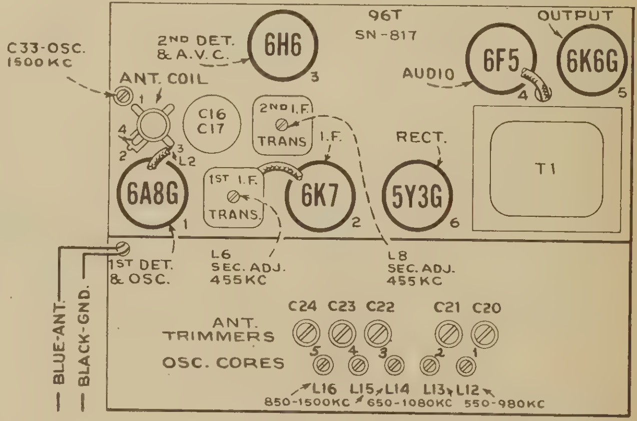




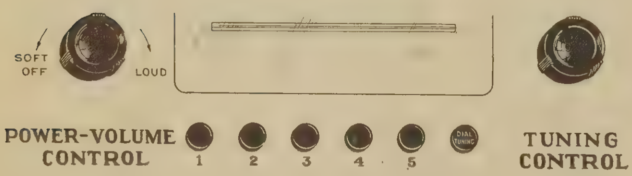
The Push-Button Assembly is Fastened to the Chassis by Only Two Screws, and may be Quickly and Easily Swung out for Convenient Access to the Sockets and Other Parts, as shown in the above Illustrations.



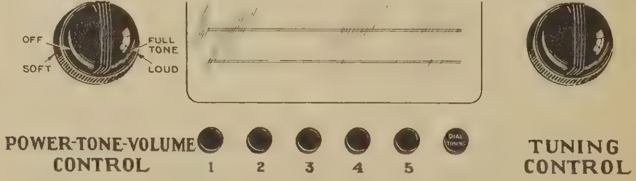
Model 95T5, Tube and Trimmer Locations



Models 96E, 96T, and 96T1, Tube and Trimmer Locations



Location of Controls, Model 95T5
The right-hand push button is for dial tuning



Location of Controls, Models 96E, 96T, and 96T1
The right-hand push button is for dial tuning

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

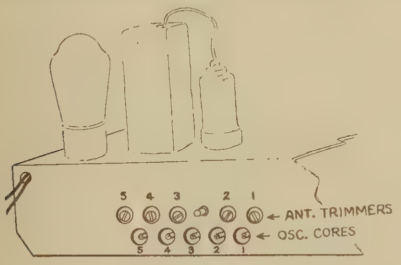
After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark.	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

*** The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.**



Push-Button Adjustments

No. 1—Approximately 550-980 kc.
Nos. 2, 3—Approximately 650-1,080 kc.
Nos. 4, 5—Approximately 850-1,500 kc.

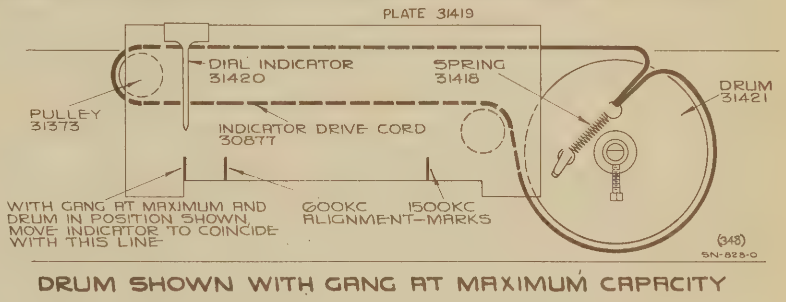


PLATE 31419
DIAL INDICATOR 31420
SPRING 31418
DRUM 31421
PULLEY 31373
INDICATOR DRIVE CORD 30877
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN, MOVE INDICATOR TO COINCIDE WITH THIS LINE
600KC 1500KC ALIGNMENT-MARKS
(348)
SN-828-0
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

Adjustments for Electric Tuning

These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

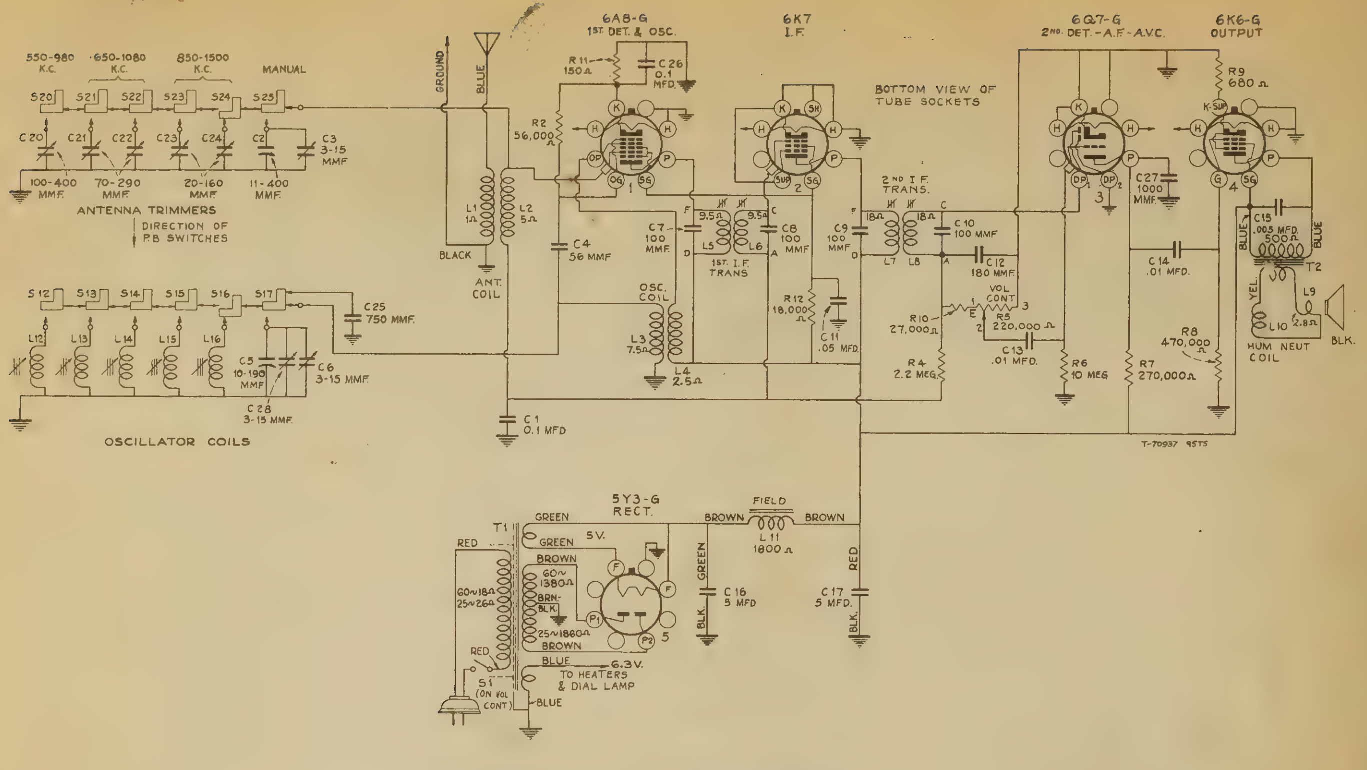
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

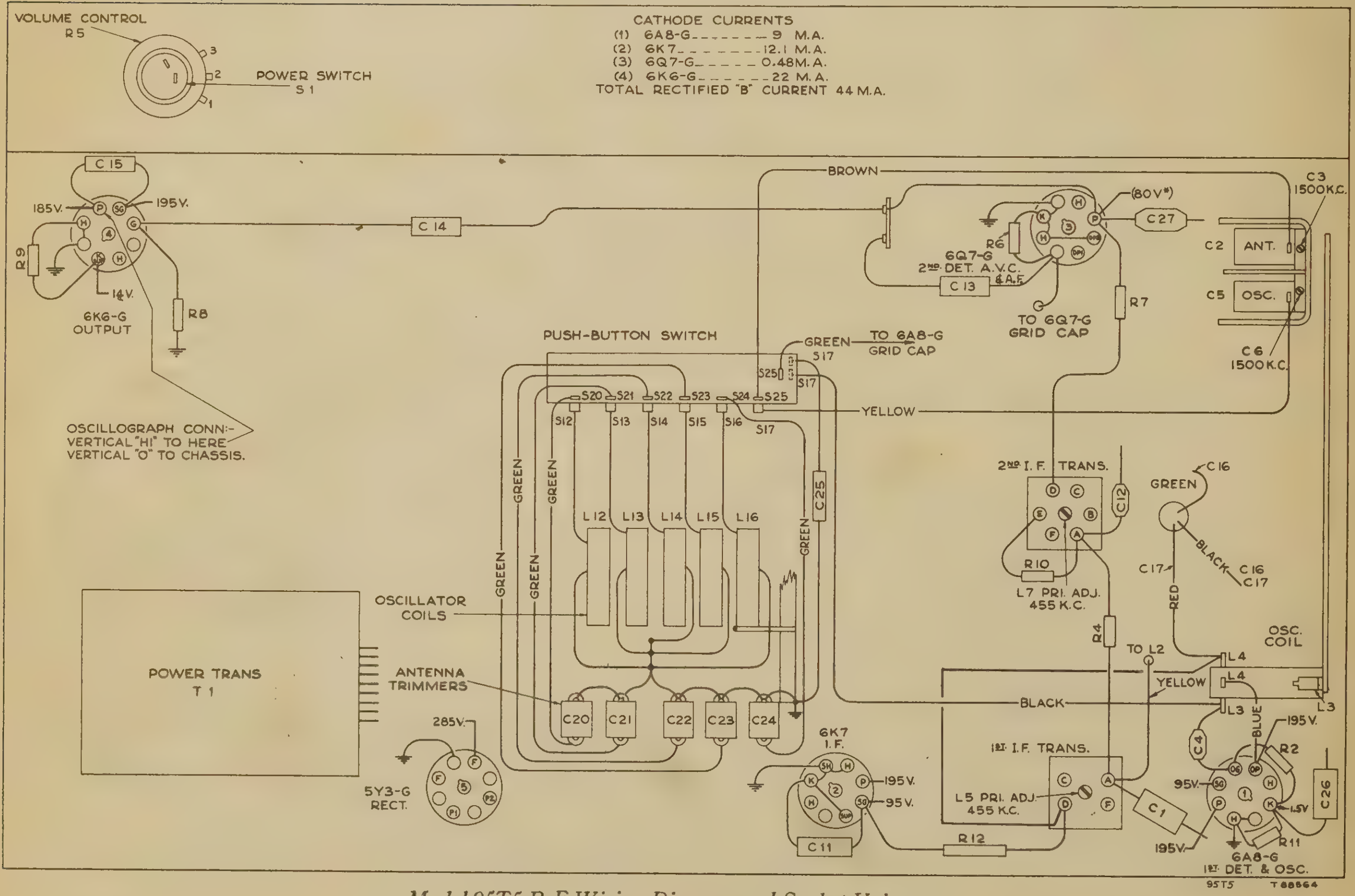
6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.

Precautionary Lead Dress.—

1. Dress green lead from antenna coil to switch away from the chassis and gang.
2. Dress green leads from oscillator coils away from the adjustment screws.
3. Dress leads in power-transformer primary circuit to left end of chassis.
4. In 95T5, C27 must be dressed close to chassis and clear of rotor.
5. In 96E, 96T, and 96T1, dress ground bus from heater of 6H6 close to chassis, and dress blue lead from 2nd I-F transformer to volume control close to chassis.



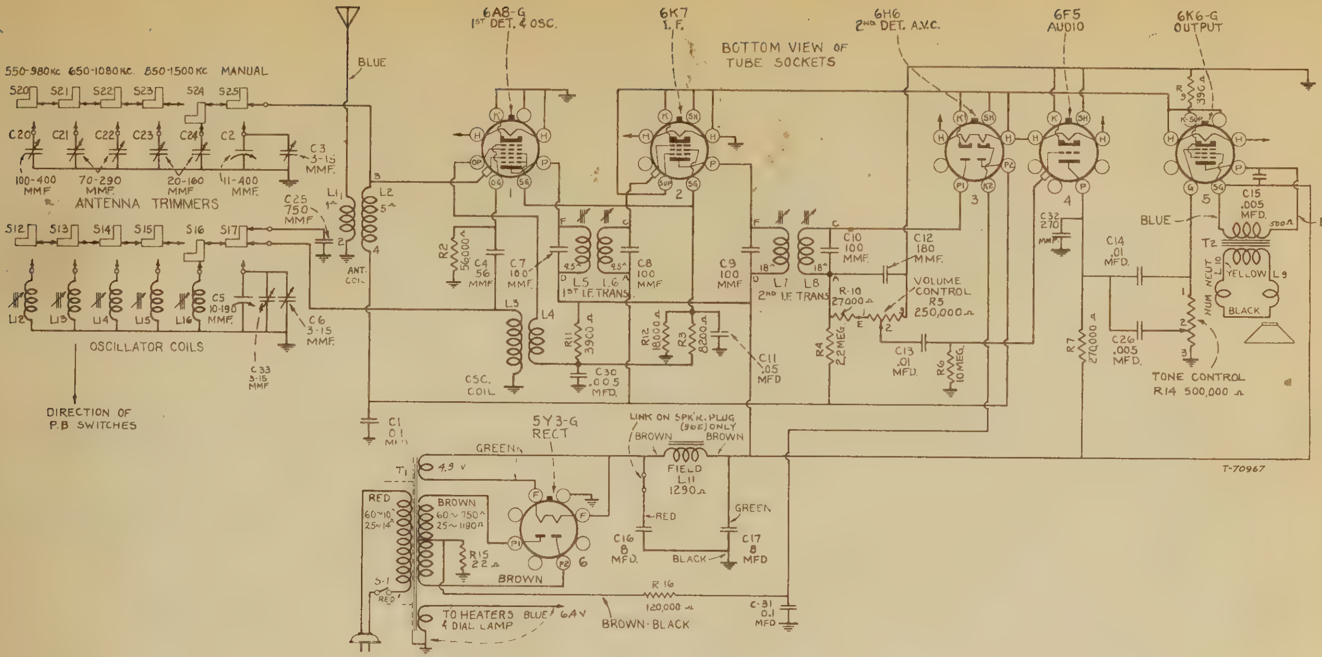
Model 95T5 Schematic Circuit Diagram



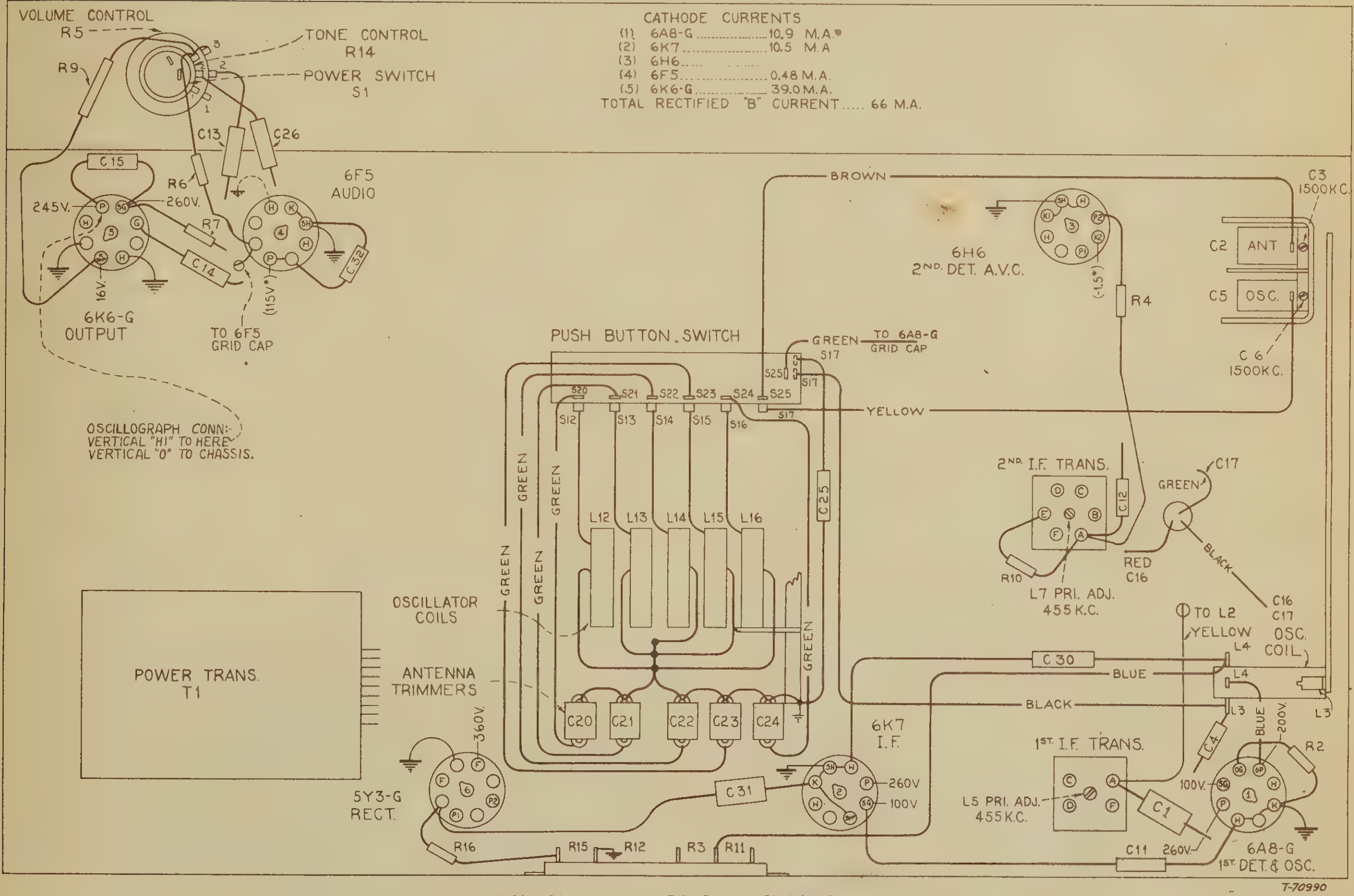
Model 95T5 R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Models 96E, 96T, and 96T1 Schematic Circuit Diagram
(L3 is 7½ ohms, and L4 is 2½ ohms)



CATHODE CURRENTS

(1)	6A8-G	10.9 M.A.
(2)	6K7	10.5 M.A.
(3)	6H6	
(4)	6F5	0.48 M.A.
(5)	6K6-G	39.0 M.A.

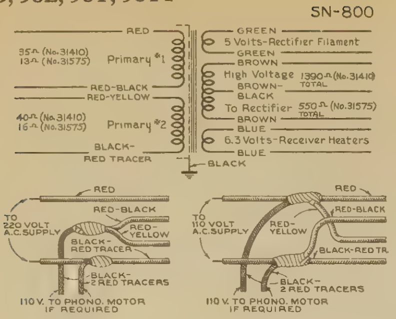
TOTAL RECTIFIED "B" CURRENT ..... 66 M.A.

BOTTOM VIEW - REAR OF CHASSIS

Models 96E, 96T, and 96T1 R-F Wiring Diagram and Socket Voltages

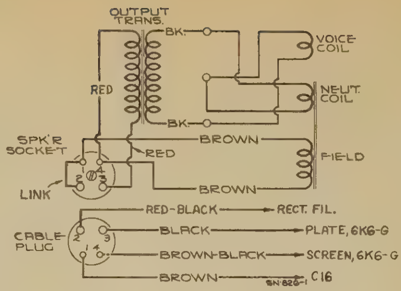
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Right—Connections and Colors of Loudspeaker and Cable in Model 96E.

Left—Replacement Universal Power Transformer. (Stock No. 31410 in 95T5. Stock No. 31575 in 96E, 96T, and 96T1.)



REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31416	Capacitor— trimmer capacitor bank (C20, C21, C22, C23, C24)	
12723	Capacitor—56 mmfd. (C4)	
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	
13003	Capacitor—180 mmfd. (C12)	
12488	Capacitor—270 mmfd. (C32) — Models 96T, 96T1 and 96E only	
31435	Capacitor—750 mmfd. (C25)	
12635	Capacitor—1,000 mmfd. (C27)—Model 95T5 only	
4838	Capacitor—.005 mfd. (C15, C26, C30) (C26, C30—Models 96T, 96T1 and 96E only)	
14393	Capacitor—.01 mfd. (C13, C14)	
4886	Capacitor—.05 mfd. (C11)	
30899	Capacitor—0.1 mfd. (C1, C26, C31) (C26 Model 95T5 only) (C31 Models 96T, 96T1 and 96E only)	
31423	Capacitor—Comprising 2 sections 5 mfd. each (C16, C17)—Model 95T5 only	
31424	Capacitor—Comprising 2 sections 8 mfd. each (C16, C17)—Models 96T, 96T1 and 96E only	
31382	Clip—Oscillator coil and core mounting clip	
30894	Coil—Antenna coil (L1, L2)	
31098	Coil—Oscillator coil (L3, L4)	
31383	Coil—Oscillator coil (L15, L16)	
31384	Coil—Oscillator coil (L13, L14)	
31415	Coil—Oscillator coil (L12)	
31097	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28)—Model 95T5 only	
31422	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C33)—Models 96T, 96T1 and 96E only	
31413	Control—Volume control, tone control, and power switch (R5, R14, S1)—Models 96T, 96T1 and 96E only	
30877	Cord—Indicator drive cord	
30905	Core—Adjustable core for i-f transformers	
31386	Core—Adjustable core and stud for oscillator coils	
31421	Drum—Variable condenser drive cord drum	
31420	Indicator—Station selector indicator pointer	
11891	Lamp—Dial lamp	
31419	Plate—Dial color plate	
5040	Plug—4-contact female plug for speaker cable —Model 96E only	
31373	Pulley—Indicator drive cord pulley	
31425	Resistor—Voltage divider comprising one 22 ohm, one 18,000 ohm, one 8,200 ohm, and one 3,900 ohm sections (R3, R11, R12, R15)—Models 96T, 96T1 and 96E only	
13428	Resistor—150 ohms, ¼ watt (R11)—Model 95T5 only	
31388	Resistor—390 ohms, 1 watt (R9)—Models 96T, 96T1 and 96E only	
31024	Resistor—680 ohms, ½ watt (R9)—Model 95T5 only	
30151	Resistor—18,000 ohms, 1 watt (R12)—Model 95T5 only	
12738	Resistor—27,000 ohms, ¼ watt (R10)	
12286	Resistor—56,000 ohms, ¼ watt (R2)	
13734	Resistor—120,000 ohms, ¼ watt (R16)—Models 96T, 96T1 and 96E only	
12199	Resistor—270,000 ohms, ¼ watt (R7)	
12285	Resistor—470,000 ohms, ¼ watt (R8)—Model 95T5 only	
12679	Resistor—2.2 meg., ¼ watt (R4)	
13601	Resistor—10 meg., ¼ watt (R6)	
14887	Retainer—Pulley retainer	
14350	Screw—No. 8-32 square head set screw for drum Stock No. 31421	
31364	Socket—Dial lamp socket	
31251	Socket—Radiotron socket	
31418	Spring—Indicator drive cord tension spring	
31414	Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	
31412	Volume control and power switch (R5, S1)—Model 95T5 only	
30957	Transformer—First i-f transformer (L5, L6, C7, C8)	
30903	Transformer—Second i-f transformer (L7, L8, C9, C10)	
31409	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)—Model 95T5 only	
31574	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)—Models 96T, 96T1 and 96E only	
31408	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)—Model 95T5 only	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)—Models 96T, 96T1 and 96E only	
31410	Transformer—Power transformer 100-120 and 200-240 volts, 50-60 cycle (T1)—Model 95T5 only	
31575	Transformer—Power transformer 100-120 and 200-240 volts, 50-60 cycle (T1)—Models 96T, 96T1 and 96E only	
	SPEAKER ASSEMBLIES Model 95T5 (Speaker 84326-2)	
31473	Cone—Speaker cone and voice coil (L9)	
31472	Speaker—Complete	
31474	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Model 96T (Speaker 84326-1)	
31476	Cone—Speaker cone and voice coil (L9)	
31475	Speaker—Complete	
31477	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Model 96T1 (Speaker 84327-1)	
31443	Cone—Speaker cone and voice coil (L9)	
31477	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Model 96E (Speaker 84308-1)	
31443	Cone—Speaker cone and voice coil (L9)	
31442	Speaker—Complete	
31444	Transformer—Output transformer (T2)	
	MISCELLANEOUS ASSEMBLIES	
31428	Button—Station selector switch push button	
31429	Dial—Station selector dial scale	
31095	Discs—10 celluloid protector discs for call letter markers	
31667	Escutcheon—Dial escutcheon—Model 96T1 only	
30773	Knob—Volume control or tuning condenser large knob—Models 96T, 96T1 and 96E only	
31355	Knob—Tuning condenser small knob—Models 96T, 96T1 and 96E only	
30863	Knob—Volume control and power switch, or tuning condenser knob—Model 95T5 only	
31391	Knob—Tone control and power switch knob —Models 96T, 96T1 and 96E only	
30991	Marker—Station call letter markers	
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob Stock No. 31391	
30900	Spring—Retaining spring for knob Stock No. 30863	

RCA Victor

MODEL 95T5LW

Chassis No. RC-348F

Five-Tube, Electric-Tuning, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast (Manual Tuning) .... 540-1,720 kc

Push Button Ranges:

Two stations between approximately 150- 300 kc
One station between approximately 550- 980 kc
One station between approximately 650-1,080 kc
One station between approximately 850-1,500 kc

Intermediate Frequency .... 455 kc

TUBE COMPLEMENT

(1) RCA-6A8-G	First Detector-Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7-G	2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6K6-G	Power Output
(5) RCA-5Y3-G	Full-Wave Rectifier

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 50 watts
Rating C	100-120, 200-240 volts, 50-60 cycles, 50 watts

POWER OUTPUT

Undistorted	1.0 watt
Maximum	1.5 watts

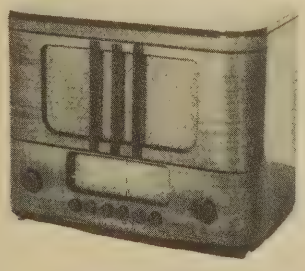
LOUDSPEAKER

Type	5-inch Electrodynamic
V.C. Impedance	3.1 ohms at 400 cycles

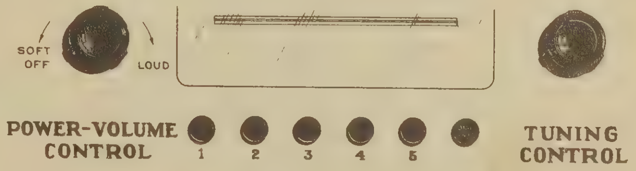
Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	9⅜	11¾	6¼
Chassis Base (inches)	2⅞	11⅛	5

Over-all Chassis Height	8 inches
Weight	10¼ lbs. (Net), 13 lbs. (Shipping)
Tuning Drive Ratio	7 to 1



Model 95T5LW



Location of Controls
The right-hand push button is for dial tuning

Precautionary Lead Dress.—

1. Blue, green, and black leads to the volume control should be dressed away from the 6K6-G socket and from leads to this socket.
2. Leads to the power transformer should be dressed toward the end of the chassis and away from wires to the push button assembly.
3. Power cord lead should be dressed toward the end of the chassis.

First Edition.

Printed in U. S. A.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment. — As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

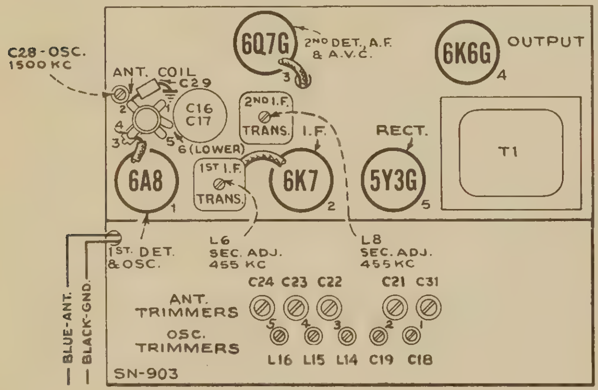
After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

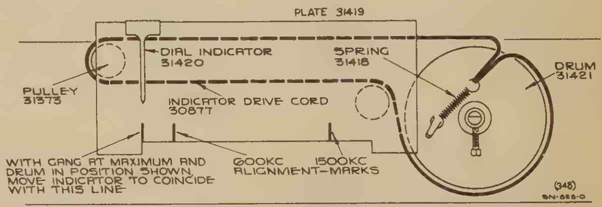
After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

*** The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.**





DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

At Left—*Tube and Trimmer Locations*

Adjustments for Electric Tuning

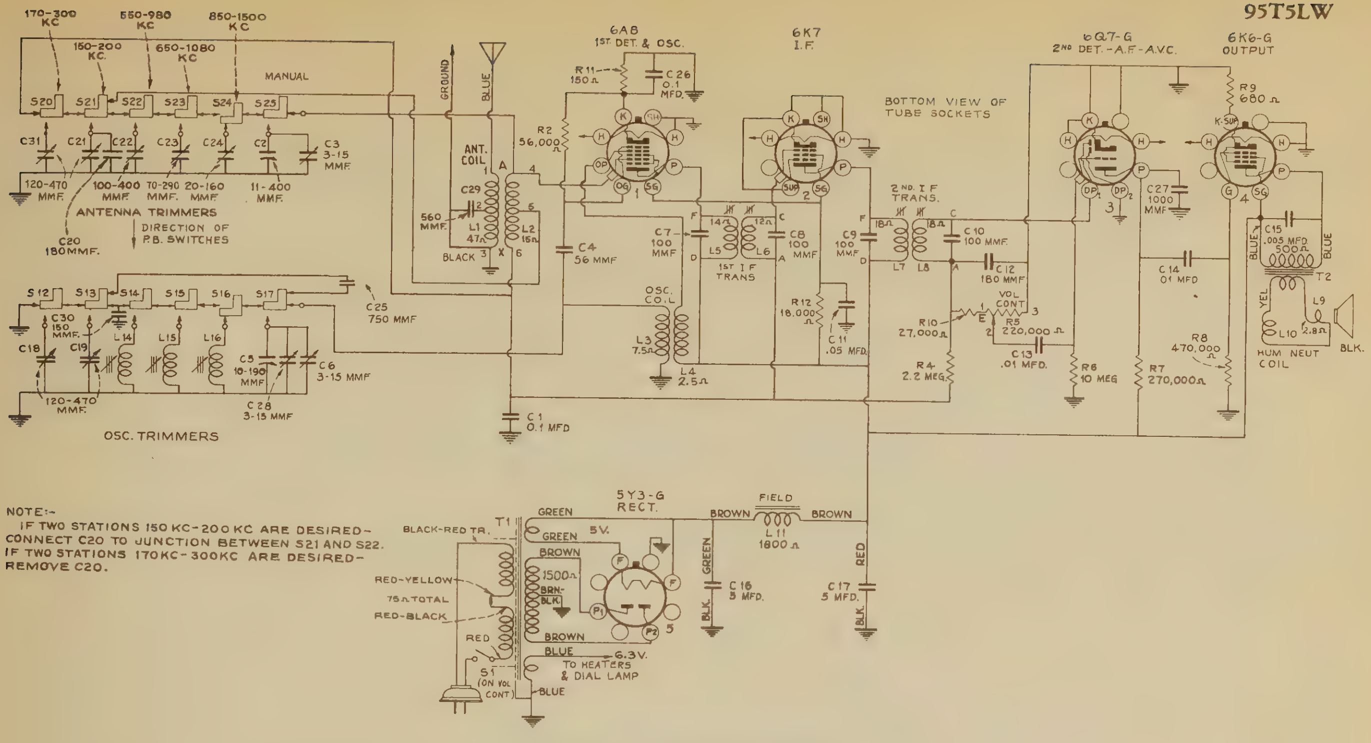
This model has six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations. The station buttons connect to separate magnetite-core coils and trimmers and to separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for preliminary adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in the order of the push button ranges shown on the schematic diagram.
2. To adjust buttons Nos. 1 and 2, best results are obtained by using a test-oscillator. Using a separate receiver, tune in the desired station for button No. 1 and zero-beat the test-oscillator against the carrier of this station. Then, keeping the same setting on the test-oscillator, connect its output to the antenna of the 95T5LW. Adjust the antenna and oscillator trimmers of button No. 1 for maximum output. Proceed in a similar fashion for button No. 2.
3. To adjust buttons Nos. 3, 4 and 5, proceed as follows:
   a. Push in the dial-tuning (right-hand) button, and manually tune in the third station on the list.
   b. Push in station-button No. 3 and adjust No. 3 oscillator core (L14) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
   c. Adjust No. 3 antenna trimmer (C22) for maximum output on this station.
   d. Adjust for each of the remaining stations in a similar manner.

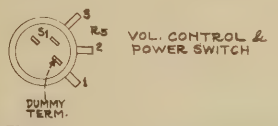
   (Clockwise adjustment of oscillator and antenna trimmers tunes the circuits to lower frequencies.)

   e. Make a final careful adjustment of the oscillator and antenna trimmers, using one or two feet of wire as an antenna to insure sharp peaking.



NOTE:-
IF TWO STATIONS 150 KC-200 KC ARE DESIRED-CONNECT C20 TO JUNCTION BETWEEN S21 AND S22.
IF TWO STATIONS 170KC-300KC ARE DESIRED-REMOVE C20.

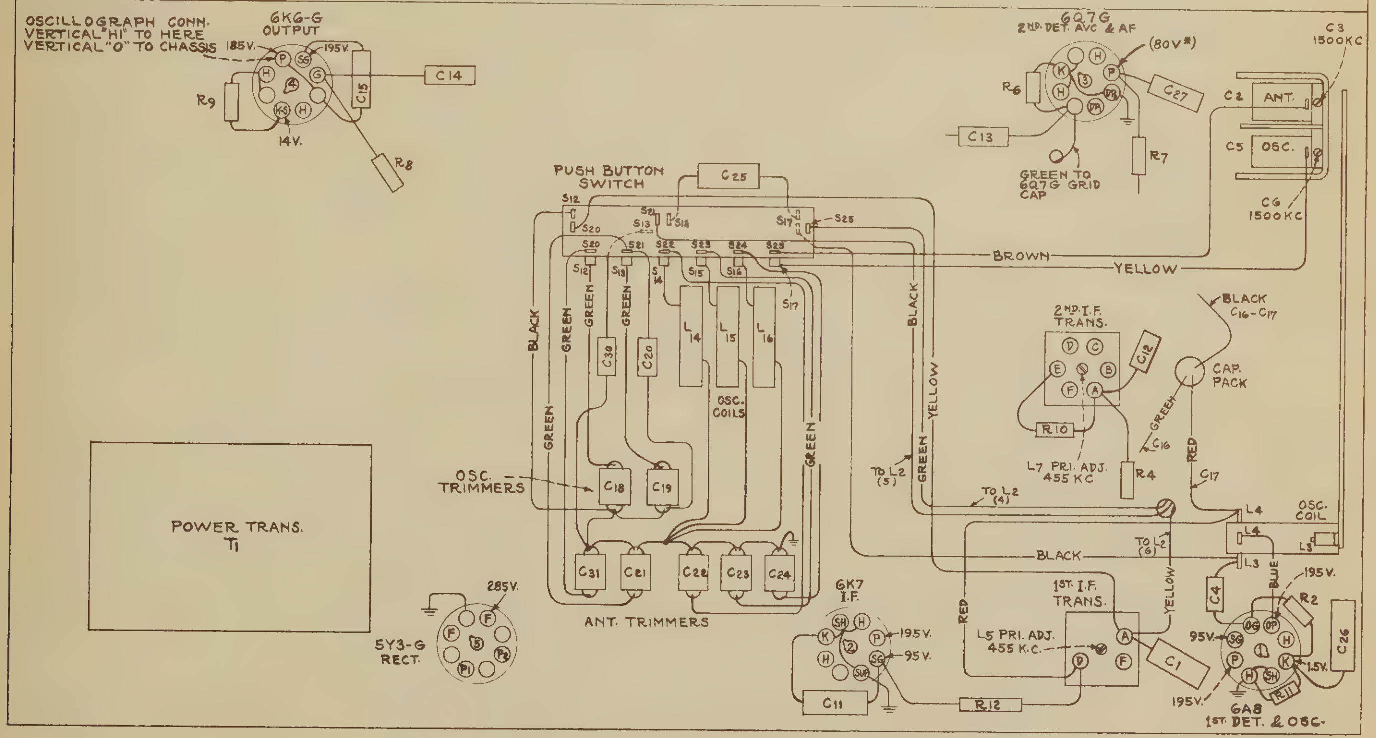
Schematic Circuit Diagram



CATHODE CURRENTS

(1)	6A8-G	9. M.A.
(2)	6K7	12.1 M.A.
(3)	6Q7-G	0.48 M.A.
(4)	6K6-G	22. M.A.

TOTAL RECTIFIED "B" CURRENT 44 M.A.



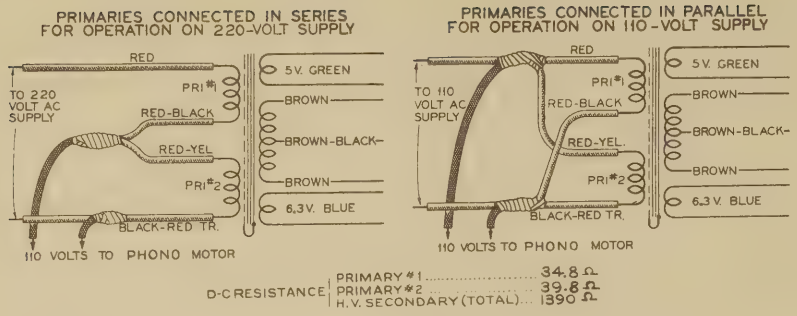
BOTTOM VIEW- REAR OF CHASSIS

T-88621-0

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Replacement Universal Power Transformer

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES (RC-348-F)	
32216	Capacitor—Antenna trimmer capacitor bank (C31, C21, C22, C23, C24)	
32217	Capacitor—Trimmer capacitor bank (C18, C19)	
12723	Capacitor—56 mmfd. (C4)	
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	
12725	Capacitor—150 mmfd. (C30)	
13003	Capacitor—180 mmfd. (C12, C20)	
12537	Capacitor—560 mmfd. (C29)	
31435	Capacitor—750 mmfd. (C25)	
12635	Capacitor—1,000 mmfd. (C27)	
4838	Capacitor—.005 mfd. (C15)	
14393	Capacitor—.01 mfd. (C13, C14)	
4886	Capacitor—.05 mfd. (C11)	
30899	Capacitor—0.1 mfd. (C1, C26)	
31423	Capacitor—Comprising 2 sections 5 mfd. each (C16, C17)	
31382	Clip—Oscillator coil and core mounting clip	
32218	Coil—Antenna coil (L1, L2)	
31098	Coil—Oscillator coil (L3, L4)	
31383	Coil—Oscillator coil (L16)	
31384	Coil—Oscillator coil (L15)	
31415	Coil—Oscillator coil (L14)	
31097	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28)	
30877	Cord—Indicator drive cord	
30905	Core—Adjustable core and stud for i-f transformers	
31386	Core—Adjustable core and stud for oscillator coils	
31421	Drum—Variable condenser drive cord drum	
32219	Indicator—Station selector indicator pointer	
11891	Lamp—Dial lamp	
31419	Plate—Dial color plate	
31373	Pulley—Indicator drive cord pulley	
13428	Resistor—150 ohms, ¼ watt (R11)	
31024	Resistor—680 ohms, ½ watt (R9)	
30151	Resistor—18,000 ohms, 1 watt (R12)	
12738	Resistor—27,000 ohms, ¼ watt (R10)	
12286	Resistor—56,000 ohms, ¼ watt (R2)	
12199	Resistor—270,000 ohms, ¼ watt (R7)	
12285	Resistor—470,000 ohms, ¼ watt (R8)	
12679	Resistor—2.2 meg., ¼ watt (R4)	
13601	Resistor—10 meg., ¼ watt (R6)	
14887	Retainer—Pulley retainer	
14350	Screw—No. 8-32 square head set screw for drum Stock No. 31421	
31364	Socket—Dial lamp socket	
31251	Socket—Tube socket	
31418	Spring—Indicator drive cord tension spring	
32215	Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	
31412	Volume control and power switch (R5, S1)	
30902	Transformer—First i-f transformer (L5, L6, C7, C8)	
30903	Transformer—Second i-f transformer (L7, L8, C9, C10)	
31410	Transformer—Power transformer, 100-120 and 200-240 volts, 50-60 cycle (T1)	
	SPEAKER ASSEMBLIES (Speaker 84326-2)	
31473	Cone—Speaker cone and voice coil (L9)	
31472	Speaker—Complete	
31474	Transformer—Output transformer (T2)	
	MISCELLANEOUS ASSEMBLIES	
31428	Button—Station selector switch push button	
32220	Dial—Station selector dial scale	
31095	Discs—10 celluloid protector discs for call letter markers	
30863	Knob—Volume control and power switch, or tuning condenser knob	
30991	Marker—Station call letter markers	
30900	Spring—Retaining spring for knob Stock No. 30863	

RCA Victor

MODELS 96K and 96T2

Six-Tube, Electric-Tuning, Two-Band, A-C, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 22—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"Short Wave" (C)	5.6-18.0 mc

R-F Alignment Frequencies

"Short Wave" (C)	15.2 mc (osc., ant.)
"Standard Broadcast" (A)	1,500 kc (osc.)

Six Electric Tuning Positions .... 550 to 1,500 kc
Two stations between approximately 550- 950 kc
Two stations between approximately 680-1,180 kc
Two stations between approximately 890-1,500 kc

Intermediate Frequency .... 455 kc

RCA Tube Complement

(1) RCA-6K8	First Detector-Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6	Audio Power Output
(6) RCA-5W4	Full-Wave Rectifier

Pilot Lamps (2) .... Mazda No. 47, 6.3 volts, 0.15 amp.

Power Supply Ratings

Rating A	105-125 volts, 50-60 cycles, 75 watts
Rating B	105-125 volts, 25-60 cycles, 75 watts
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 75 watts

Power Output

	96T2	96K
Undistorted	2.0 watts	2.5 watts
Maximum	4.0 watts	4.5 watts

Loudspeaker

Model	96T2	96K
Type	6 inch, electrodynamic	12 inch, electrodynamic
Voice Coil Impedance at 400 cycles	2.6 ohms	2.2 ohms

Mechanical Specifications

	96T2	96K
Height (inches)	12½	37¼
Width (inches)	15	22
Depth (inches)	8⅞	10-7/32
Net Weight (pounds)	17	39
Shipping Weight (pounds)	21	49
Chassis Base Dimensions	13 inches x 6½ inches x 2½ inches	
Overall Chassis Height	6 inches	6 inches

Operating Controls .... (1) Volume (large knob); Power Switch-Tone (small knob); (2) Manual Tuning (large knob), Band Switch (small knob) left to right, "A" and "C"; (3) Eight Push Buttons, left to right: Switch for Victrola Attachment, six Station Buttons, Dial-Tuning Button.

Tuning Drive Ratio 12:1

General Description

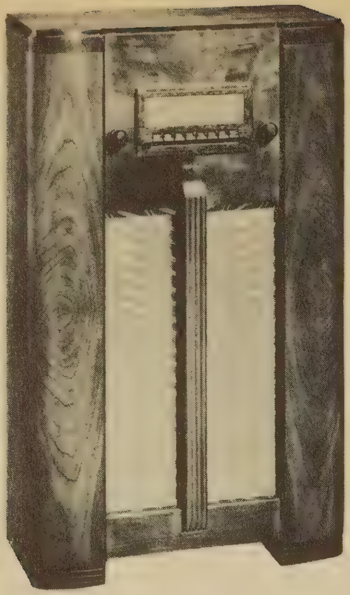
These receivers employ a two-band superheterodyne circuit which is operated either manually or by electric tuning on standard broadcast, and includes foreign short-wave, aircraft, police, and amateur stations on the short-wave band. Model 96T2 is a table model, and uses a 6-inch electrodynamic loudspeaker. Model 96K is a console, using the same chassis with a 12-inch electrodynamic loudspeaker.

Features of design include magnetite-core adjusted i-f transformers and "Electric Tuning" oscillator coils; jack and switch for Victrola attachment; aural-compensated volume control; continuously variable tone-control; automatic volume control; dust-proof electrodynamic speaker; and straight-line dial.

First Edition

Trademark "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U. S. A.



Model 96K

Service Data

Loudspeaker.—Centering of the loudspeaker voice coil is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Precautionary Lead Dress.—(1) Dress 110-volt leads to power transformer away from audio wiring. (2) The 12,000 ohm resistor (R14) should be dressed clear of wiring and parts, since it becomes heated during operation. (3) The leads across back of chassis must be dressed under the electrolytic capacitor to prevent approaching the Victrola jack. (4) All leads in vicinity of antenna coil must be dressed away from the coil windings.

Victrola Attachment.—A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola ,Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

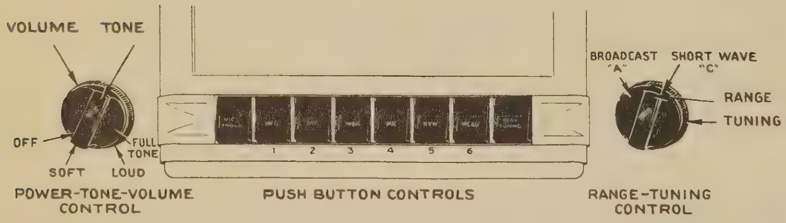
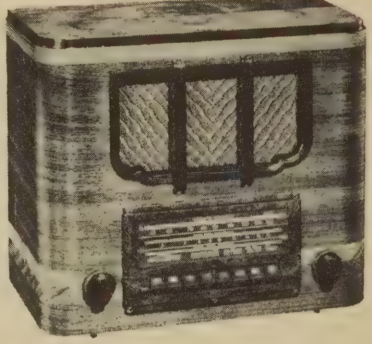


Figure 1—Location of Controls



Model 96T2

Calibration Scale

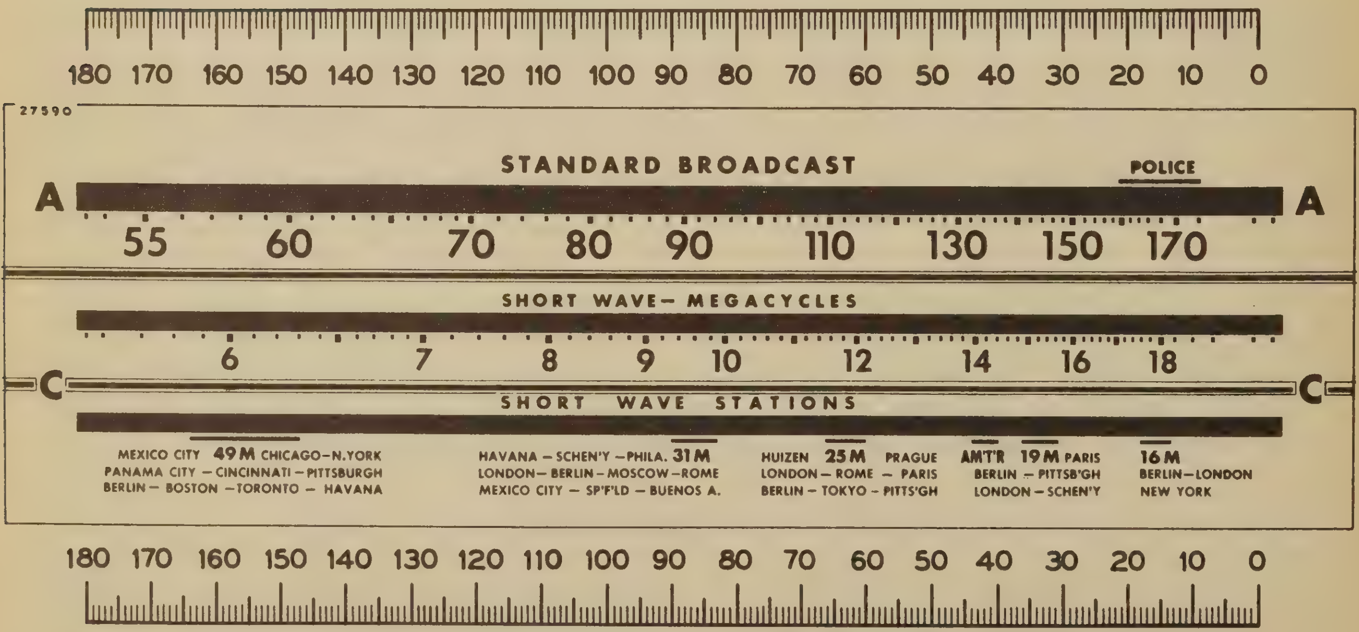


Figure 2—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

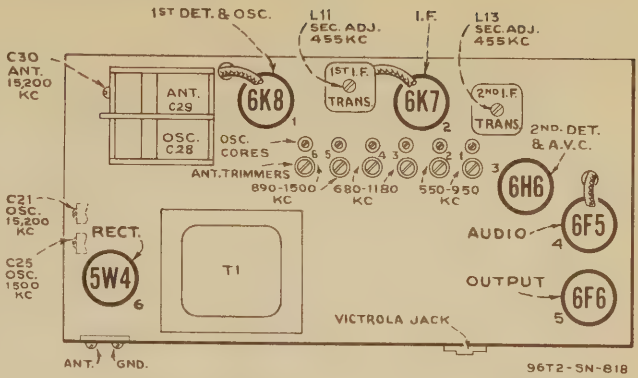


Figure 3—Tube and Trimmer Locations

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	15.2 mc	15.2 mc (33.5°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc (28°) "A" band	C25 (osc.)
5	Follow "Adjustments for Electric Tuning."			

* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly while adjusting C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 40.5° (14.29 mc), where a weaker signal should be received.

Note: Oscillator tracks 455 kc above signal on both bands.

ADJUSTMENTS FOR ELECTRIC TUNING

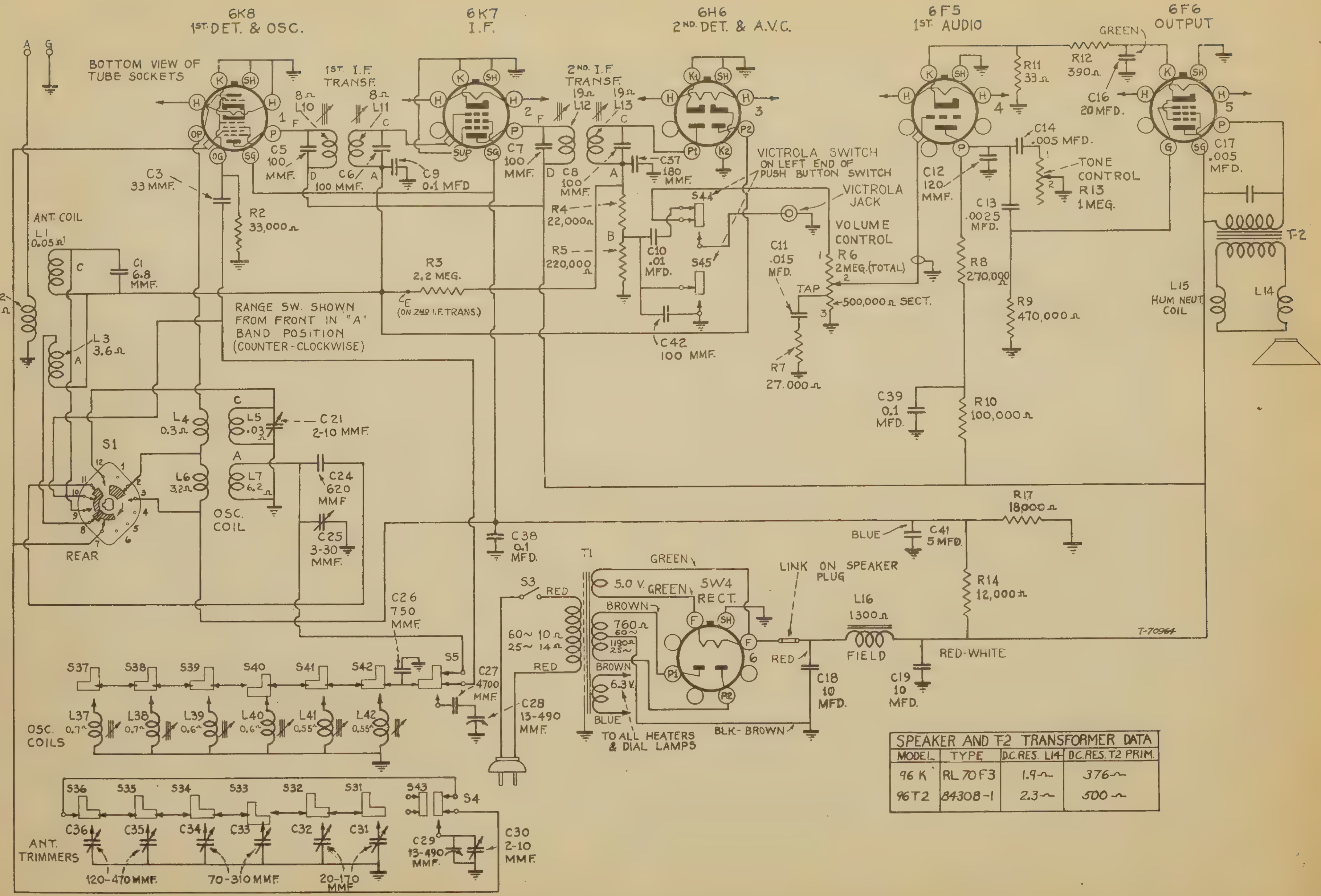
These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Use one or two feet of wire as an antenna to ensure sharp peaking.
3. Push in the dial-tuning button, and manually tune in the first station on the list.
4. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
5. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

6. Adjust for each of the remaining five stations in the same manner.
7. Make a final readjustment of the magnetite-cores.



SPEAKER AND T-2 TRANSFORMER DATA			
MODEL	TYPE	D.C.RES. L14	D.C.RES. T2 PRIM.
96 K	RL 70F3	1.9Ω	376Ω
96T2	84308-1	2.3Ω	500Ω

Figure 4—Schematic Circuit Diagram

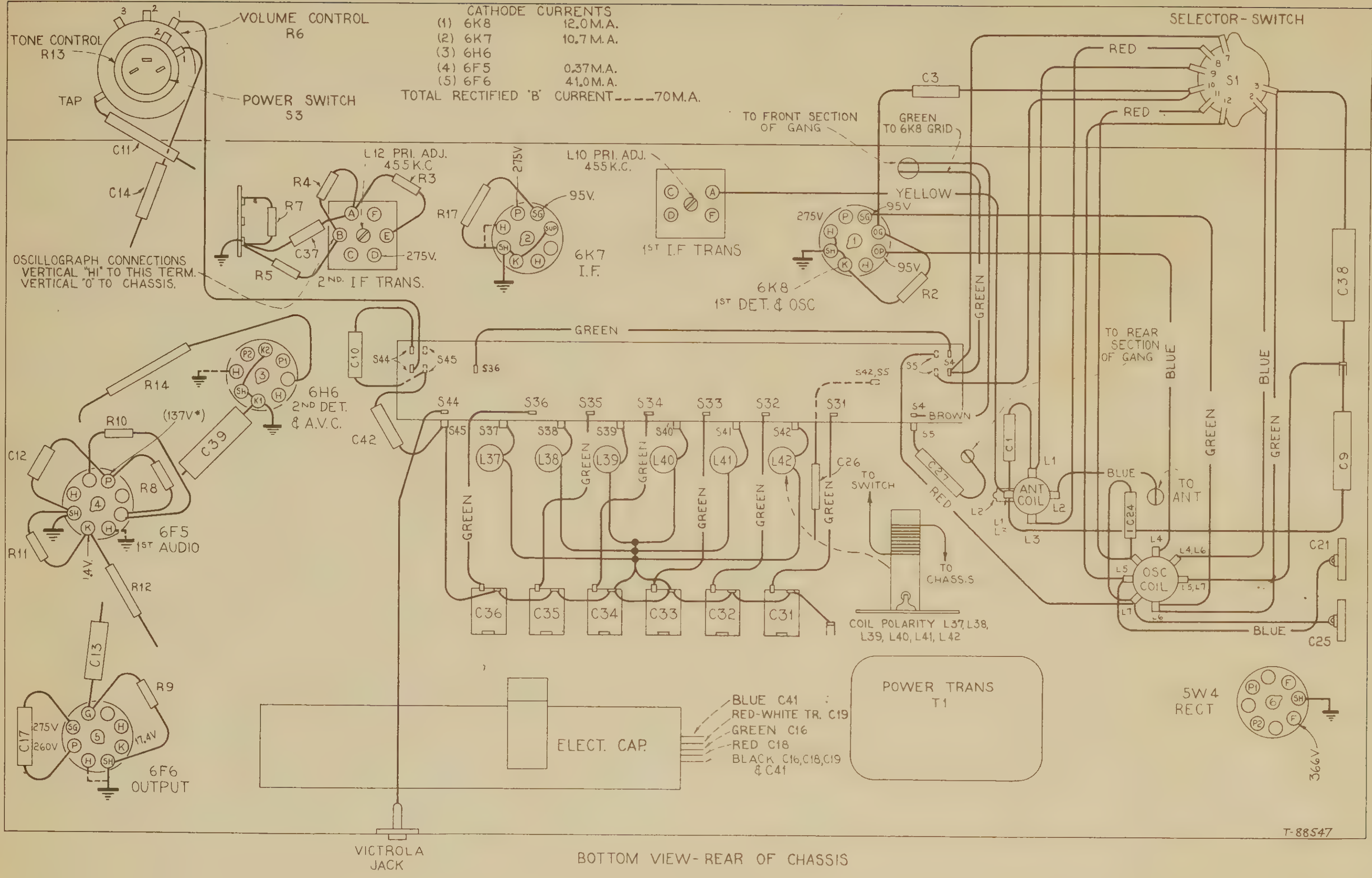
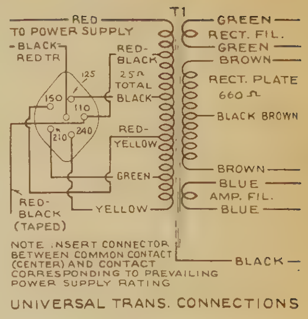


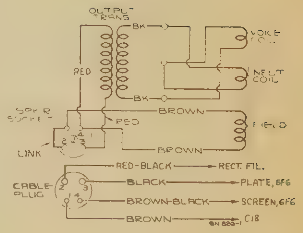
Figure 5—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)



Above — Connections and Colors of Loudspeaker and Cable.

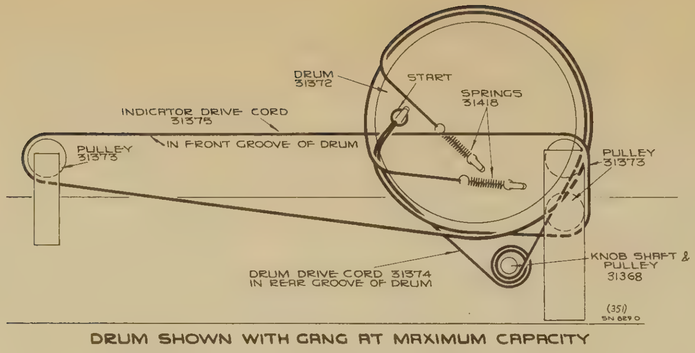

DRUM 31372
START
SPRINGS 31418
INDICATOR DRIVE CORD 31375
IN FRONT GROOVE OF DRUM
PULLEY 31373
PULLEY 31373
KNOB SHAFT & PULLEY 31368
DRUM DRIVE CORD 31374 IN REAR GROOVE OF DRUM
(351)
SN 6290
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Figure 6—Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14517	Board—Antenna—ground terminal board	
31379	Capacitor—Dual trimmer 2-10 Mmfd. and 3-30 Mmfd. (C21, C25)	
14079	Capacitor—6.8 Mmfd. (C1)	
31387	Capacitor—Antenna coil trimmer capacitor bank 20-470 Mmfd. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 Mmfd. (C3)	
12720	Capacitor—100 Mmfd. (C42)	
30904	Capacitor—100 Mmfd. (C5, C6, C7, C8)	
12724	Capacitor—120 Mmfd. (C12)	
13003	Capacitor—180 Mmfd. (C37)	
31381	Capacitor—620 Mmfd. (C24)	
31435	Capacitor—750 Mmfd. (C26)	
31399	Capacitor—4,700 Mmfd. (C27)	
5107	Capacitor—.0025 Mfd. (C13)	
4838	Capacitor—.005 Mfd. (C14, C17)	
14393	Capacitor—.01 Mfd. (C10)	
11315	Capacitor—.015 Mfd. (C11)	
4839	Capacitor—0.1 Mfd. (C9, C38, C39)	
31371	Capacitor—Comprising two 10 Mfd., and one 5 Mfd. sections (C18, C19, C16, C41)	
31382	Clip—Oscillator coil and core mounting clip	
31378	Coil—Antenna coil—"A" and "C" bands (L1, L2, L3)	
31377	Coil—Oscillator coil—"A" and "C" bands (L4, L5, L6, L7)	
31383	Coil—Oscillator coil—"A" band (L41, L42)	
31384	Coil—Oscillator coil—"A" band (L39, L40)	
31385	Coil—Oscillator coil—"A" band (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31375	Cord—Indicator pointer drive cord	
31374	Cord—Variable condenser drum drive cord	
30905	Core—Adjustable core for I.F. transformer	
31386	Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, 31385	
31372	Drum—Variable condenser drive cord drum and calibrator dial	
31480	Lamp—Dial lamp	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Drive cord pulley	
14671	Resistor—33 ohms, ¼ watt (R11)	
31388	Resistor—390 ohms, 1 watt (R12)	
31389	Resistor—12,000 ohms, wire-wound, 5 watts (R14)	
30151	Resistor—18,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R9)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31418	Spring—Indicator, or drum drive cord tension spring	
31364	Socket—Dial lamp socket	
14278	Socket—Pickup socket	
31251	Socket—Radiotron socket	
31367	Switch—Range switch (S1)	
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
30957	Transformer—First I.F. transformer (L10, L11, C5, C6)	
30903	Transformer—Second I.F. transformer (L12, L13, C7, C8)	
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	
31446	Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1)	
	SPEAKER ASSEMBLIES Model 96T2 (Speaker No. 84308-1)	
31443	Cone—Speaker cone and voice coil (L14)	
31442	Speaker—Complete	
31444	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Model 96K (Speaker No. RL70F-3)	
13866	Cap—Dust cap for cone center	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31275	Cone—Speaker cone and voice coil (L14)	
31302	Plug—4-contact male plug	
31300	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
31301	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push-button	
31456	Cover—8 protective covers for push-button markers	
31396	Dial—Station selector dial scale	
31395	Escutcheon—Station selector escutcheon less dial scale and push-buttons	
31392	Indicator—Station selector indicator pointer	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31589	Marker—Station call letter markers	
31457	Marker—"Victrola" marker for push button	
31458	Marker—"Dial Tuning" marker for push button	
31393	Screen—Station selector dial color screen and light diffuser	
11377	Screw—Chassis mounting screws, washers and lockwashers—Model 96K	
31390	Screw—Chassis mounting screws, washers and lockwashers—Model 96T2	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 31355 and 30773	
30330	Spring—Retaining spring for knob Stock No. 31391	
31394	Stop—Indicator pointer slide stop	

RCA Victor

MODELS 96K2, 96T3, 97E, 97KG and 97T

Six- and Seven-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 24—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges	
"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7 mc
"Short Wave" (C)	7-22 mc

R-F Alignment Frequencies	
"Short Wave" (C)	20 mc (osc., ant.)
"Medium Wave" (B)	6.1 mc (osc.)
"Standard Broadcast" (A)	1,500 kc (osc.)

Six Electric Tuning Positions.............. 550-1,500 kc

2 stations between approximately 550- 950 kc
2 stations between approximately 680-1,180 kc
2 stations between approximately 890-1,500 kc

RCA Tube Complement	
(1) RCA-6K8	First-Detector—Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second-Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6	Audio Power Amplifier
(6) RCA-5W4	Full-Wave Rectifier
(7) RCA-6U5 (Models 97E, 97KG and 97T)	Tuning Tube

Pilot Lamps (2 on Models 96K2, 96T3) (3 on Models 97E, 97KG and 97T)............. Mazda 47, 6.3 volts, .15 amp.

Power Supply Rating	
Rating A	105-125 volts, 50-60 cycles, 80 watts
Rating B	105-125 volts, 25-60 cycles, 80 watts
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 80 watts

Power Output	96T3, 97T	97E, 96K2, 97KG
Undistorted	2.0 watts	2.5 watts
Maximum	4.0 watts	4.5 watts

Loudspeaker			
Type			Electrodynamic
Voice-coil impedance	84308-1	2.6 ohms	at 400 cycles
	RL-70F-3	2.25 ohms	
	RL-63H-3	2.25 ohms	

Mechanical Specifications

Models	96K2	96T3	97E	97KG	97T
Height (inches)	37¼	12½	23¹¹⁄₁₆	35	12¹⁵⁄₁₆
Width (inches)	22	15½	28	32	15⅝
Depth (inches)	10	9¼	14¹³⁄₃₂	12⁷⁄₁₆	8½
Net Weight (pounds)	56	19	42	53	18
Shipping Weight	60	23	50	70	23

Chassis Base Dimensions	13-in. wide, 6½-in. deep, 2½-in. high
Over-all Chassis Height	6 inches
Tuning Drive Ratio	12 to 1

General Description

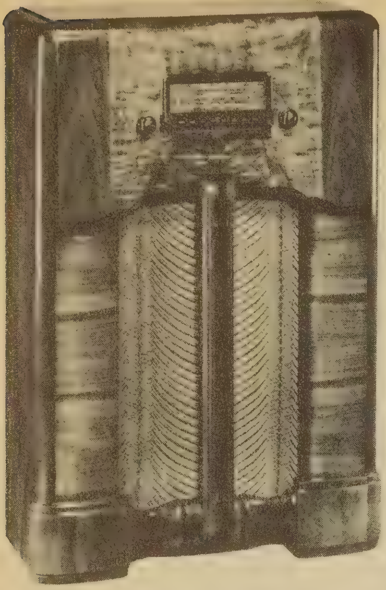
The seven-tube models have a "Magic Eye" tuning tube and illuminated indicator to show when the set is being operated on electric tuning. All models have electric tuning for six stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; jack and switch for Victrola attachment; straight-line dial; dust-proof electrodynamic loudspeaker.

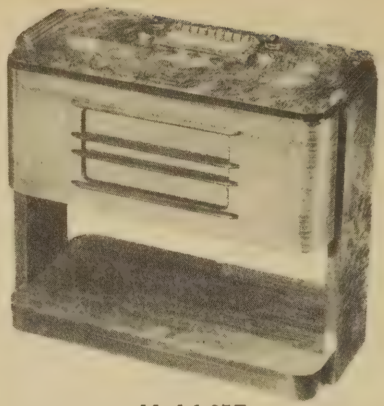
First Edition

Printed in U. S. A.

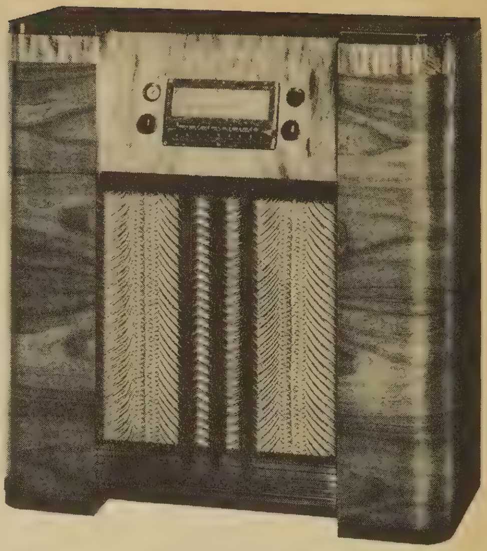
Trademarks "Victrola," "Magic Eye" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.



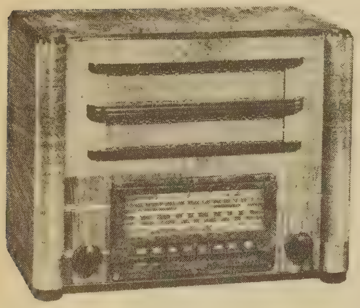
Model 96K2



Model 97E



Model 97KG



Model 96T3

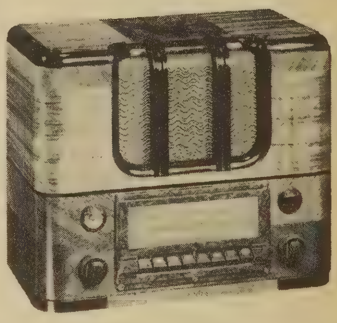
Model 96K2 is a six-tube console with 12-inch speaker.

Model 96T3 is a six-tube table model, with 6-inch speaker.

Model 97E is a seven-tube end-table model, with 8-inch speaker.

Model 97KG is a seven-tube console-grand, with 12-inch speaker.

Model 97T is a seven-tube table model, with 6-inch speaker.



Model 97T

Calibration Scale

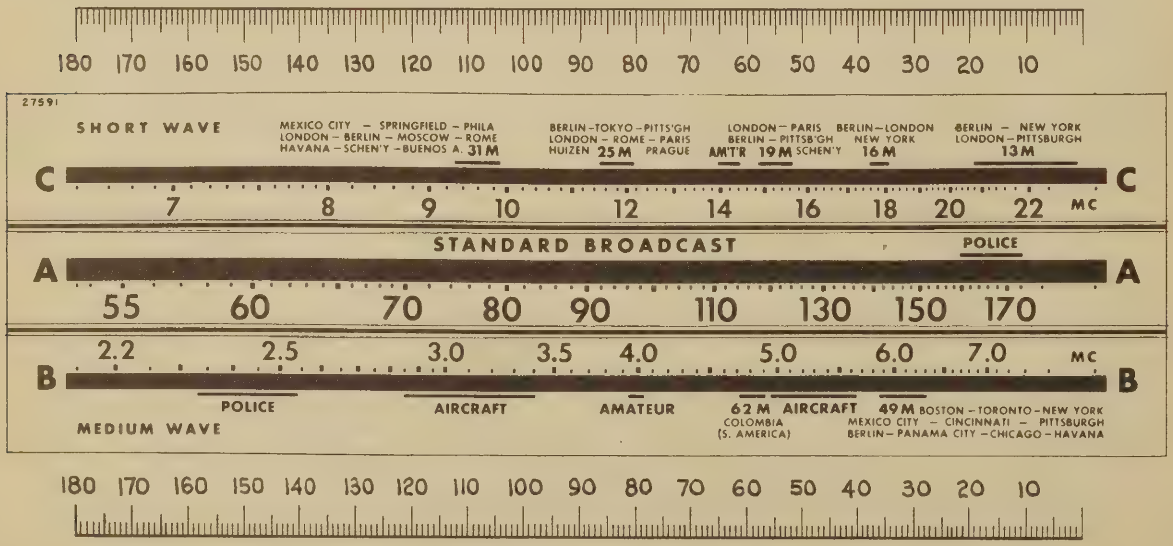


Figure 1—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 28½° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

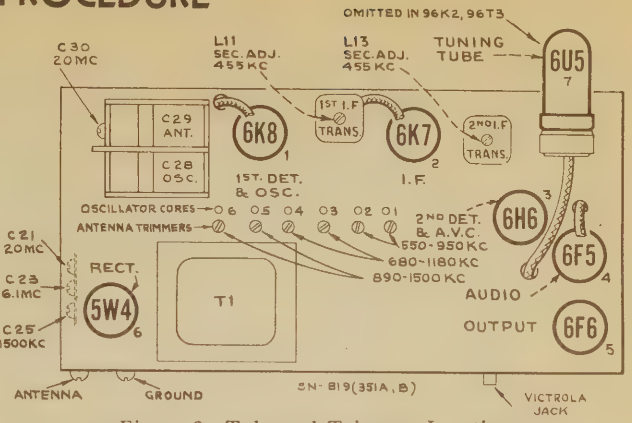


Figure 2—Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	20 mc	20 mc (23°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 400 ohms	6.1 mc	6.1 mc (31°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by turning to approximately 49° (5.19 mc), at which point a weaker signal should be received.

Note: Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

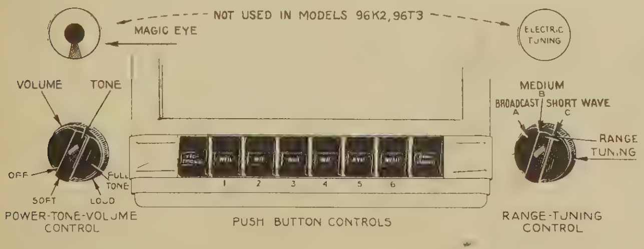


Figure 3—Location of Controls

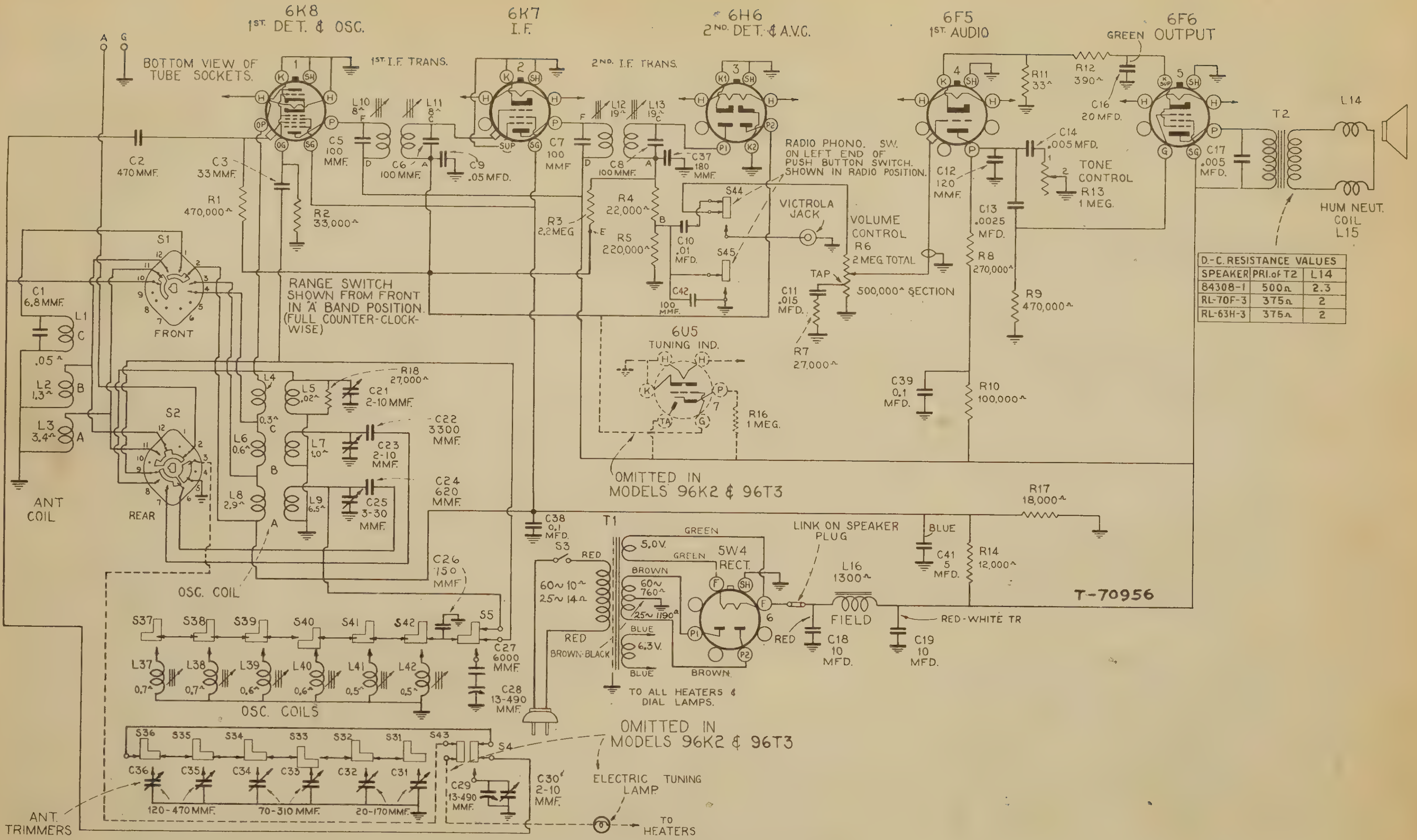
The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the "Magic Eye" in Models 97E, 97KG, and 97T to ensure sharp peaking. With Model 96T3 or 96K2, use one or two feet of wire as an antenna when making the final adjustments in order to obtain sharp peaking.

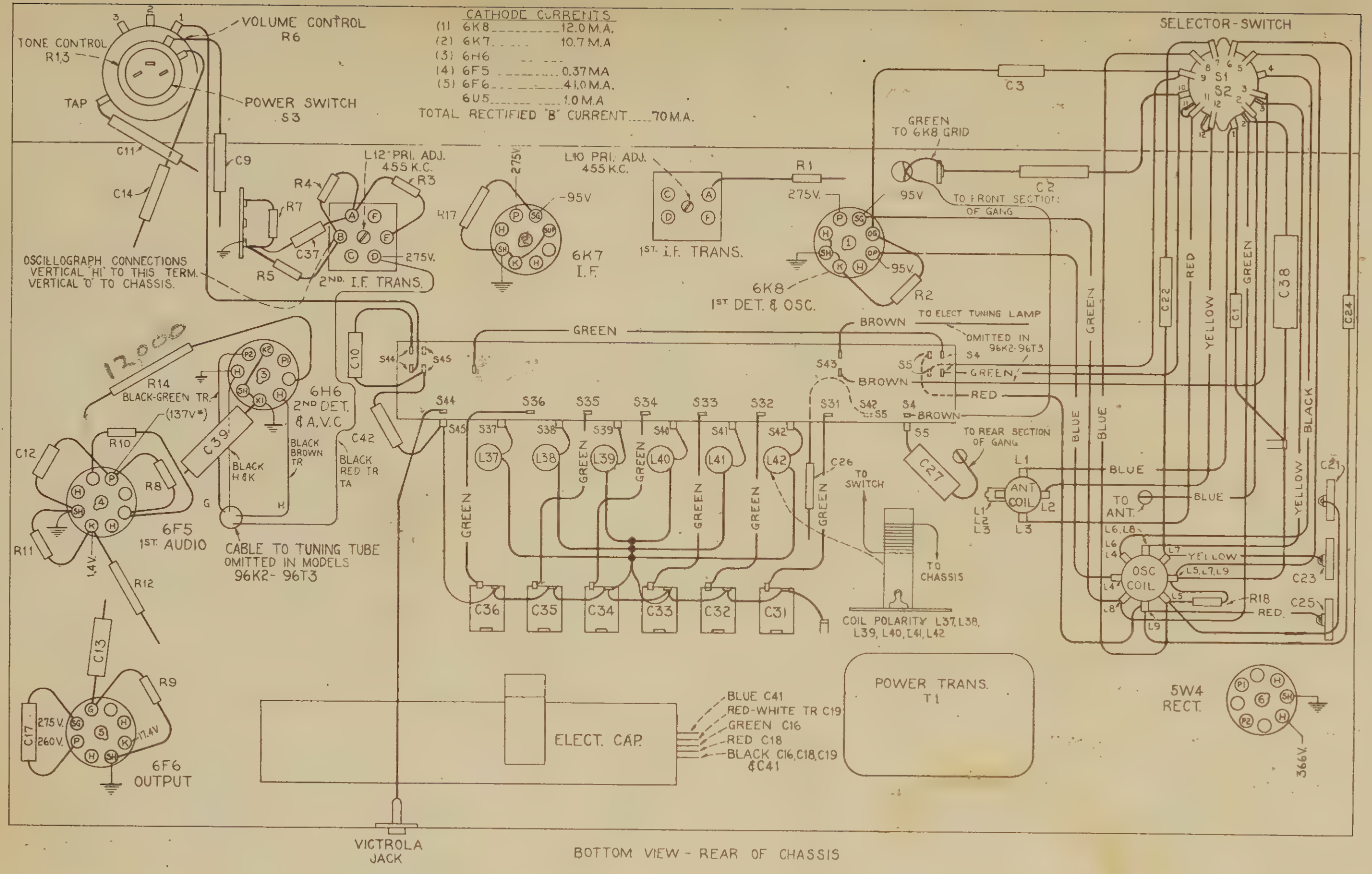


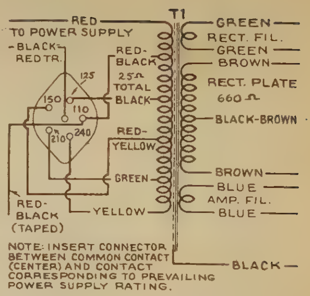
D-C. RESISTANCE VALUES		
SPEAKER	PRI. of T2	L14
84308-1	500Ω	2.3
RL-70F-3	375Ω	2
RL-63H-3	375Ω	2

Figure 4—Schematic Circuit Diagram

Precautionary Lead Dress.—

1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Electric-tuning lamp leads must be dressed in front of range switch.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.
7. Leads across back of chassis should be dressed under electrolytic to prevent approaching Victrola jack.





UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

Figure 5—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

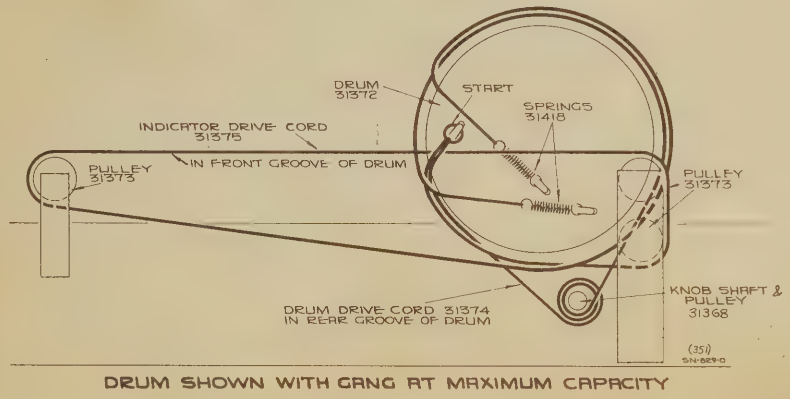
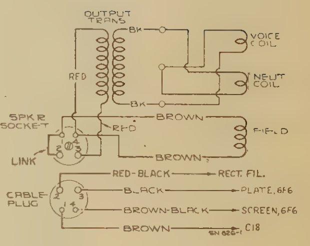

DRUM 31372
START
SPRINGS 31418
INDICATOR DRIVE CORD 31375
IN FRONT GROOVE OF DRUM
PULLEY 31373
PULLEY 31373
KNOB SHAFT & PULLEY 31368
DRUM DRIVE CORD 31374 IN REAR GROOVE OF DRUM
(351) SN-829-0
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Figure 6—(At Left) Arrangement of Drive Cords for Tuning Condenser and Dial Indicator



Above — Connections and Colors of Loudspeaker and Cable.

Victrola Attachment.—A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Loudspeaker.—Centering of the loudspeaker voice coil is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14517	Board—Antenna ground terminal board	
30752	Bracket—Magic Eye bracket and holder — Models 97T, 97KG, and 97E only	
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	
14079	Capacitor—6.8 mmfd. (C1)	
31387	Capacitor—Antenna trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C42)	
30904	Capacitor—100 mmfd. (C5, C6, C7, C8)	
12724	Capacitor—120 mmfd. (C12)	
13003	Capacitor—180 mmfd. (C37)	
30433	Capacitor—470 mmfd. (C2)	
31381	Capacitor—620 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
31403	Capacitor—3,300 mmfd. (C22)	
31405	Capacitor—6,000 mmfd. (C27)	
5107	Capacitor—.0025 mfd. (C13)	
4838	Capacitor—.005 mfd. (C14, C17)	
14393	Capacitor—.01 mfd. (C10)	
4839	Capacitor—0.1 mfd. (C38, C39)	
11315	Capacitor—.015 mfd. (C11)	
4886	Capacitor—.05 mfd. (C9)	
31371	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41)	
31382	Clip—Oscillator coil and core mounting clip	
31402	Coil—Antenna coil—A, B, and C bands (L1, L2, L3)	
31401	Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9)	
31383	Coil—Oscillator coil—A band (L41, L42)	
31384	Coil—Oscillator coil—A band (L39, L40)	
31385	Coil—Oscillator coil—A band (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31375	Cord—Indicator pointer drive cord	
31374	Cord—Variable condenser drum drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, and 31385	
31372	Drum—Variable condenser drive cord drum and calibrator dial	
31480	Lamp—Dial lamp	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Indicator drive cord pulley	
14671	Resistor—33 ohms, ¼ watt (R11)	
31388	Resistor—390 ohms, 1 watt (R12)	
31389	Resistor—12,000 ohms, wire wound, 5 watts (R14)	
30151	Resistor—18,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7, R18)	
12454	Resistor—33,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R1, R9)	
12013	Resistor—1 meg., 1/10 watt (R16)—Models 97T, 97KG, and 97E	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31418	Spring—Indicator, or drum drive cord tension spring	
31364	Socket—Dial lamp socket	
31365	Socket—"Electric Tuning" indicator lamp insulated socket	
13871	Socket—Magic Eye socket—Models 97T, 97KG, and 97E only	
14278	Socket—Pickup socket	
31251	Socket—Radiotron socket	
31398	Switch—Range switch (S1, S2)	

STOCK No.	DESCRIPTION	
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
30957	Transformer—First i-f transformer (L10, L11, C5, C6)	
30903	Transformer—Second i-f transformer (L12, L13, C7, C8)	
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	
31446	Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1)	
	SPEAKER ASSEMBLIES Models 96T3 and 97T (Speaker 84308-1)	
31443	Cone—Speaker cone and voice coil (L14)	
31442	Speaker—Complete	
31444	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Models 96K2 and 97KG (Speaker RL-70F-3)	
13866	Cap—Dust cap for cone center	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31275	Cone—Speaker cone and voice coil (L14)	
31302	Plug—4-contact male plug	
31300	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
31301	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	SPEAKER ASSEMBLIES Model 97E (Speaker RL-63H-3)	
14356	Board—3-contact speaker terminal board	
13866	Cap—Cone center dust cap	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31310	Cone—Speaker cone and voice coil (L14)	
31826	Plug—4-contact male plug for speaker	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
31824	Speaker—Complete	
14355	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push button	
31456	Cover—8 protective covers for push button markers	
31406	Dial—Station selector dial scale	
31543	Disc—"Electric Tuning" indicator disc—Models 97T, 97KG, and 97E only	
31395	Escutcheon—Station selector escutcheon — less dial scale and push buttons	
31407	Escutcheon—"Magic Eye and Electric Tuning" indicator escutcheon—Models 97T, 97KG, and 97E only	
31392	Indicator—Station selector indicator pointer	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31589	Marker—Station call letter markers for push buttons	
31458	Marker—"Dial Tuning" marker for push button	
31457	Marker—"Victrola" marker for push button	
31393	Screen—Station selector dial color screen and light diffuser	
11377	Screw—Chassis mounting screws, washers, and lockwashers—Models 96K2, and 97KG only (3 required)	
31390	Screw—Chassis mounting screws, washers, and lockwashers—Models 96T3, and 97T only (sufficient for 1 chassis)	
11210	Screw—Chassis mounting screws, washers, and lockwashers—Model 97E only (3 required)	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 31355 and 30773	
30330	Spring—Retaining spring for knob Stock No. 31391	
31394	Stop—Indicator pointer slide stop	

RCA Victor

MODELS 96E2, 96K5, 96K6, 96T7, 97K2, and 97T2

Chassis No.	RC-351L	RC-351L	RC-351L	RC-351L	RC-351K	RC-351K

Six- and Seven-Tube, Three-Band, Electric-Tuning, A-C Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7.0 mc
"Short Wave" (C)	7.0-22 mc
Six Electric Tuning Positions	550-1,500 kc

2 stations between approximately 550- 950 kc
2 stations between approximately 690-1,225 kc
2 stations between approximately 890-1,500 kc

TUBE COMPLEMENT

(1) RCA-6K8	First Detector—Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6-G	Audio Power Amplifier
(6) RCA-5Y3-G	Full-Wave Rectifier
(7) RCA-6U5 (Models 97K2 and 97T2)	Tuning Tube

Pilot Lamps (1 on Models 96K5, 96K6, 96E2, 96T7) (2 on Models 97K2, 97T2).......... Mazda No. 47, 6.3 volts, .15 amp.

POWER SUPPLY RATING

Rating A	105-125 volts, 50-60 cycles, 80 watts
Rating B	105-125 volts, 25-60 cycles, 80 watts
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 80 watts

POWER OUTPUT	96T7, 97T2	96E2, 96K5, 96K6, 97K2
Undistorted	2.0 watts	2.5 watts
Maximum	4.0 watts	4.5 watts

LOUDSPEAKER

Type.................... Electrodynamic
Voice-coil impedance 84308-1, 84308-4, RL63H-3, RL70H-1.. 2.2 ohms, RL79-1......... 3.4 ohms......... at 400 cycles

Mechanical Specifications

Models	96E2	96K5	96K6	96T7	97K2	97T2
Height (inches)	22	38	37¼	12⅝	41	12⅞
Width (inches)	24½	24	22	15⅝	27⅜	15¾
Depth (inches)	13½	10¾	10	8½	14½	9 3⁄16
Net Weight (pounds)	45	35	53	16	59	18
Shipping Weight (pounds)	52	47	66	22	77	22

Chassis Base Dimensions	13 in. wide, 6½ in. deep, 2½ in. high
Over-all Chassis Height	6½ inches
Tuning Drive Ratio	12 to 1

General Description

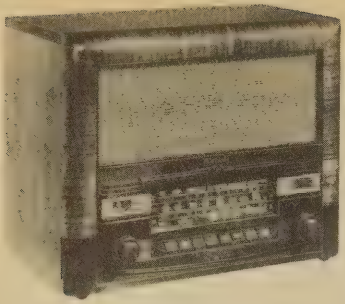
The seven-tube models have a "Magic Eye" tuning tube and illuminated indicator to show when the set is being operated on electric tuning. All models have electric tuning for six stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core "A" band oscillator coil; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; jack and switch for Victrola attachment; straight-line dial; dust-proof electrodynamic loudspeaker.

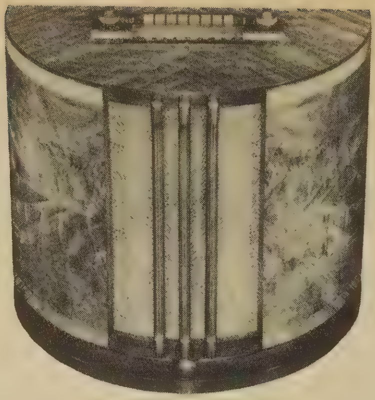
First Edition

Printed in U. S. A.

Trademarks "Victrola," "Magic Eye" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

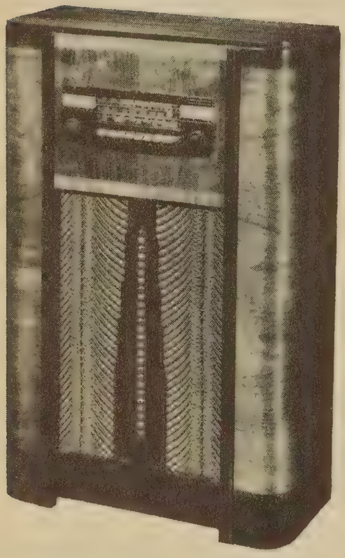


Model 97T2
7 Tubes, 6-in. Speaker

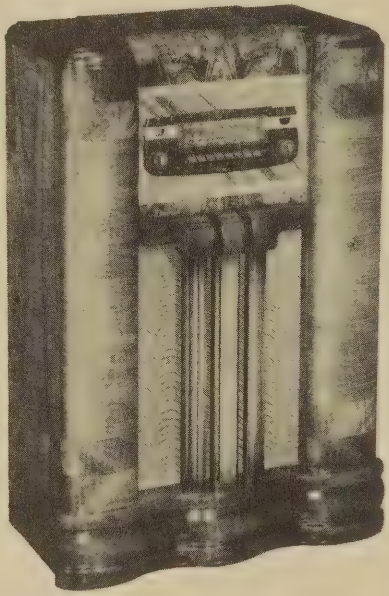


Model 96E2
6 Tubes, 8-in. Speaker

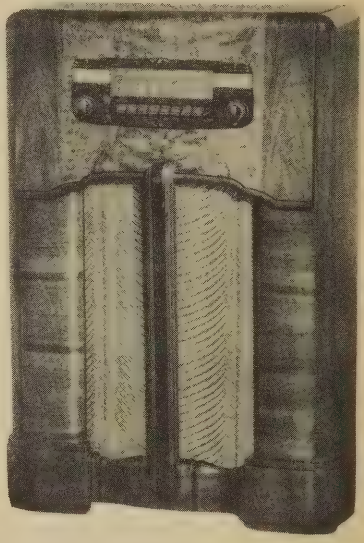
Model 96T7
6 Tubes, 6-in. Speaker



Model 96K5
6 Tubes, 12-in. Speaker

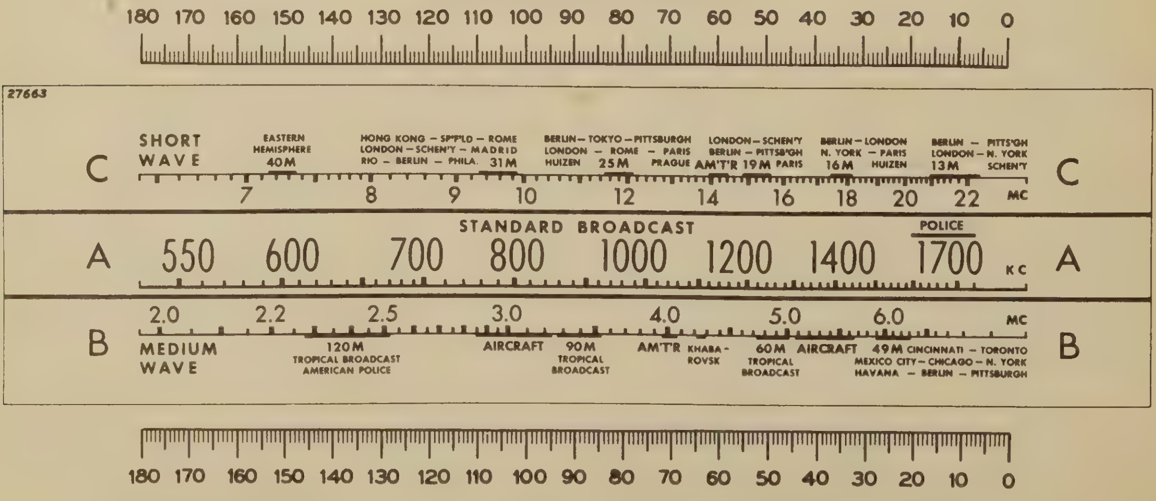


Model 97K2
7 Tubes, 12-in. Speaker



Model 96K6
6 Tubes, 12-in. Speaker

Calibration Scale



Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

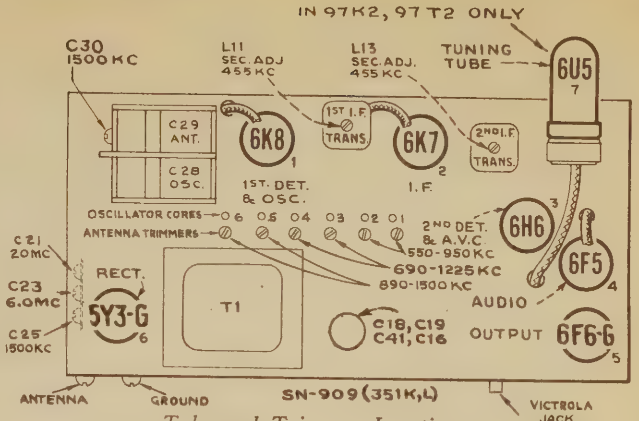
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark, and gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

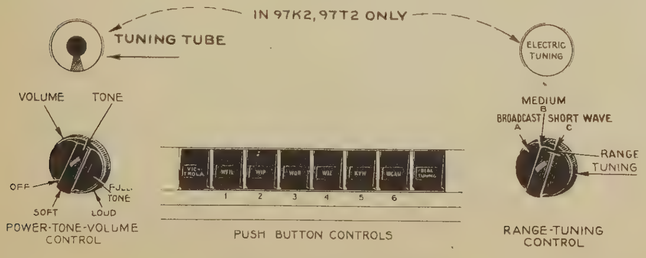
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

* Use **minimum** capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.



Location of Controls

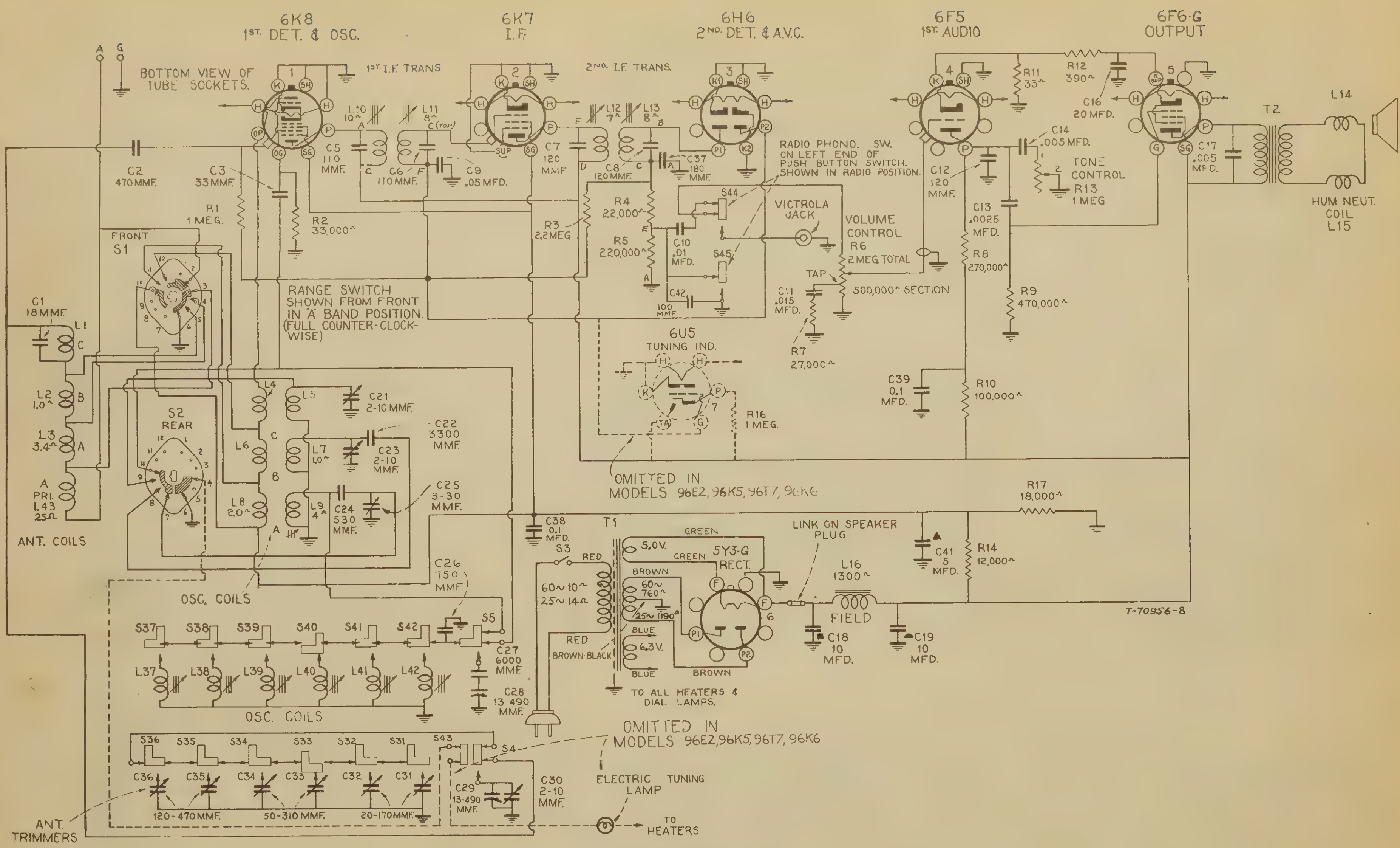
The left-hand push button is a Victrola-Attachment switch.
The right-hand push button is for dial tuning.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

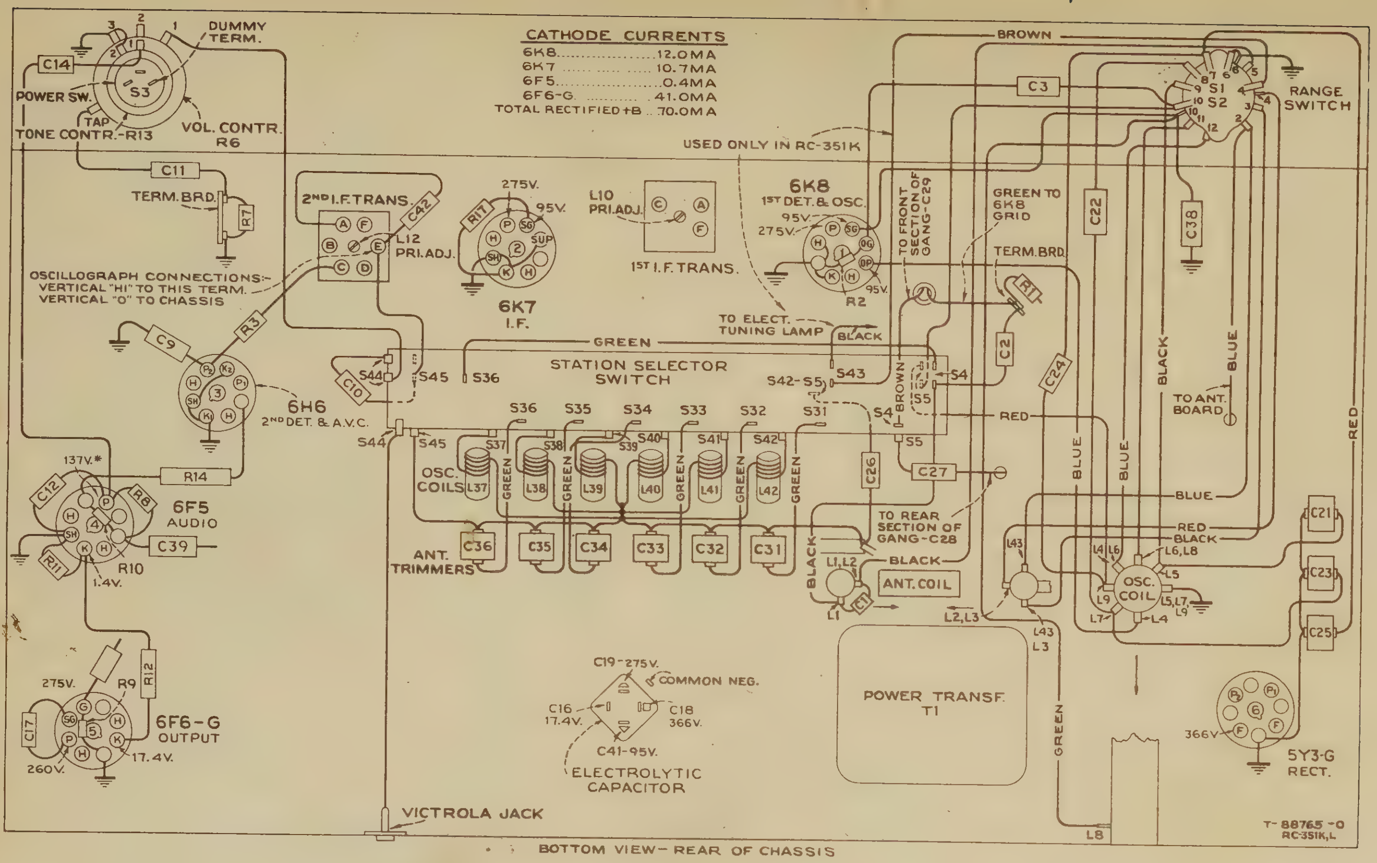
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

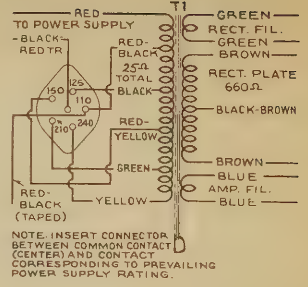


Schematic Circuit Diagram

Precautionary Lead Dress.—

1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Electric-tuning lamp leads must be dressed in front of range switch.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.



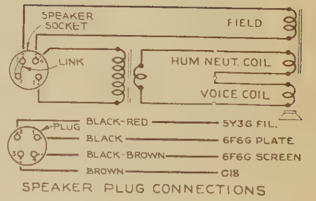


Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

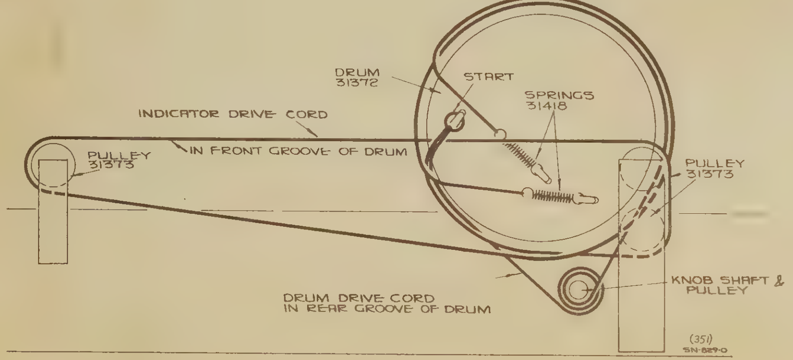
R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Above — Connections and Colors of Loudspeaker and Cable.



DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

(At Left) Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Loudspeaker.—Centering of the loudspeaker voice coil is accomplished in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Victrola Attachment.—A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES	
14517	Board—Antenna ground terminal board	
30752	Bracket—Magic Eye bracket and holder—Models 97T2 and 97K2	
32670	Bracket—Dial color plate and lamp brackets	
32684	Cable—Indicator drive cable	
30766	Cap—Magic Eye cap	
12110	Cap—Tube shield cap	
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	
12722	Capacitor—18 mmfd. (C1)	
32486	Capacitor—Antenna trimmer capacitor bank. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C42)	
14262	Capacitor—109 mmfd. (C5, C6)	
12724	Capacitor—120 mmfd. (C12)	
12404	Capacitor—120 mmfd. (C7, C8)	
14712	Capacitor—180 mmfd. (C37)	
30433	Capacitor—470 mmfd. (C2)	
32492	Capacitor—530 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
31403	Capacitor—3300 mmfd. (C22)	
31405	Capacitor—6000 mmfd. (C27)	
5107	Capacitor—.0025 mfd. (C13)	
4838	Capacitor—.005 mfd. (C14, C17)	
14393	Capacitor—.01 mfd. (C10)	
4839	Capacitor—0.1 mfd. (C38, C39)	
11315	Capacitor—.015 mfd. (C11)	
4886	Capacitor—.05 mfd. (C9)	
32485	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41)	
31382	Clip—Oscillator coil and core mounting clip	
32493	Coil—Antenna coil—A, B, and C bands (L1, L2, L3, L43)	
31951	Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9)	
31383	Coil—Oscillator coil—A band (L41, L42)	
32487	Coil—Oscillator coil—A band (L39, L40)	
31385	Coil—Oscillator coil—A band (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
32668	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
32634	Cord—Indicator pointer and variable condenser drum drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud for oscillator coil Stock Nos. 31383 and 31385	
12800	Core—Adjustable core and stud for oscillator coil Stock No. 32487	
31372	Drum—Variable condenser drive cord drum and calibrator dial	
32552	Indicator—Dial pointer and clip	
11891	Lamp—Dial or Electric Tuning indicator lamp	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Indicator drive cord pulley	
14671	Resistor—33 ohms, ¼ watt (R11)	
31388	Resistor—390 ohms, 1 watt (R12)	
31389	Resistor—12,000 ohms, wire wound, 5 watts (R14)	
30151	Resistor—18,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10)	
11398	Resistor—220,000 ohms, 1/10 watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R9)	
12013	Resistor—1 meg., 1/10 watt (R16) Models 97T2 and 97K2	
13730	Resistor—1 meg., ¼ watt (R1)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
32671	Shaft—Station selector knob shaft and pulley	
31199	Shield—Electric tuning lamp shield	
31364	Socket—Dial lamp socket	
31365	Socket—"Electric Tuning" indicator lamp insulated socket Model 97T2 and 97K2	
13871	Socket—Magic Eye socket (Models 97T2 and 97K2)	
31251	Socket—Octal base tube socket	
14278	Socket—Pickup socket	
31418	Spring—Indicator, or drum drive cord tension spring	
32669	Switch—Range switch (S1, S2)	
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
14376	Transformer—First i-f transformer (L10, L11, C5, C6)	
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	
31446	Transformer—Power transformer 100-130, 140-160, 200-250 volts, 50-60 cycle (T1)	
	SPEAKER ASSEMBLIES (84308-4) Model 96T7	
32918	Cone and Voice Coil assembly complete with metal housing	
32919	Field Coil Complete	
32920	Output Transformer	
31302	Plug—4-contact male for speaker	
	SPEAKER ASSEMBLIES (84308-1) Models 96T7 and 97T2	
31443	Cone—Speaker cone and voice coil (L14)	
31442	Speaker—Complete	
31444	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES (RL-79-1) Model 97T2	
32907	Cap—Cone center dust cap	
32906	Coil—Hum neutralizing coil	
33077	Coil—Speaker field coil	
32934	Cone—Cone and voice coil assembly	
31302	Plug—4-prong male speaker plug	
33078	Speaker—Speaker complete	
32905	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES (RL-63H-3) Model 96E2	
31825	Cap—Speaker cone center dust cap	
11469	Coil—Hum neutralizing coil (L17)	
12012	Coil—Speaker field coil (L18)	
31310	Cone—Speaker cone and voice coil (L16)	
31302	Plug—4-contact male plug for speaker	
31824	Speaker complete	
14355	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES (RL-70H-1) Models 96K5 and 97K2	
31825	Cap—Dust cap for cone center	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31275	Cone—Speaker cone and voice coil (L14)	
31302	Plug—4-contact male plug	
31592	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
14355	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Push button	
31456	Cover—8-protective covers for push button markers	
32673	Dial—Dial scale and crystal (glass)	
32672	Escutcheon—Dial escutcheon and dial—less buttons—Models 96K5, 96E2, and 96T7	
32674	Escutcheon—Dial escutcheon and dial—less buttons—Models 97K2 and 97T2	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31589	Marker—1 set station call letter markers	
31458	Marker—"Dial Tuning" push button marker	
31457	Marker—"Victrola" push button marker	
11210	Screw—Chassis mounting screws, washers and lockwashers. Models 96K5, 97K2 and 96E2 (3 required)	
31390	Screw—Chassis mounting screws, washers and lockwashers Models 96T7 and 97T2. (Sufficient for one chassis)	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob Stock No. 31391	

RCA Victor

MODEL 97K

CHASSIS No. RC-351F, RC-351F "M", RC-351F "R"

Seven-Tube, Electric-Tuning, Two-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 38—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES	
"Standard Broadcast" (A)	540-1,720 kc
"Short Wave" (C)	5.8-18.0 mc
Six Electric Tuning Positions	550 to 1,500 kc
Two stations between approximately	550- 950 kc
Two stations between approximately	680-1,180 kc (RC-351F)
Two stations between approximately	690-1,225 kc (RC-351F "M," RC-351F "R")
Two stations between approximately	890-1,500 kc
Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1) RCA-6K8	First Detector-Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6-G	Audio Power Output
(6) RCA-5Y3-G	Full-Wave Rectifier
(7) RCA-6U5	Tuning Indicator

Pilot Lamps (2)	Mazda No. 47, 6.3 volts, 0.15 amp.
POWER SUPPLY RATINGS	
Rating A	105-125 volts, 50-60 cycles, 80 watts
Rating B	105-125 volts, 25-60 cycles, 80 watts
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 80 watts
POWER OUTPUT	
Undistorted	2.5 watts
Maximum	4.5 watts
LOUDSPEAKER	
Type	12-inch, electrodynamic
Voice Coil Impedance at 400 cycles	2.2 ohms

Mechanical Specifications

Height (inches)	41
Width (inches)	27⅜
Depth (inches)	14½
Net Weight (pounds)	54½
Shipping Weight (pounds)	69
Chassis Base Dimensions	13 inches x 6½ inches x 2½ inches
Overall Chassis Height	6 inches
Tuning Drive Ratio	12:1

General Description

This receiver employs a two-band superheterodyne circuit which is operated either manually or by electric tuning on standard broadcast, and includes foreign short-wave, aircraft, police, and amateur stations on the short-wave band.

There are three different productions of Model 97K, conveniently identified by rear chassis stamping as RC-351F, RC-351F "M," and RC-351F "R."

RC-351F has a cardboard-case electrolytic with five leads.

RC-351F "M" has a metal-case electrolytic with lug contacts, and the range of No. 3 and 4 push buttons is 690-1,225 kc instead of 680-1,180 kc as in RC-351F.

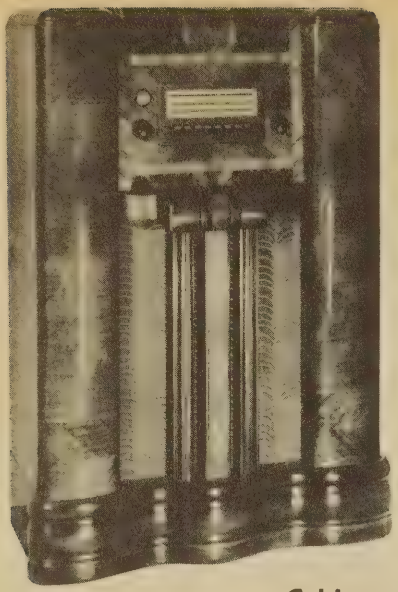
RC-351F "R" has the metal-case electrolytic, and the same push-button ranges as RC-351F "M," and in addition has different antenna coil, oscillator coil, range switch, and i-f transformers.

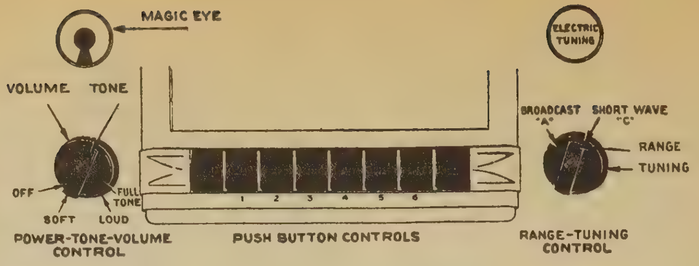
Features of design include magnetite-core adjusted i-f transformers and "Electric Tuning" oscillator coils; jack and switch for Victrola attachment; aural-compensated volume control; continuously variable tone-control; automatic volume control; dust-proof electrodynamic speaker; and straight-line dial.

First Edition.

Trademark "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U. S. A.

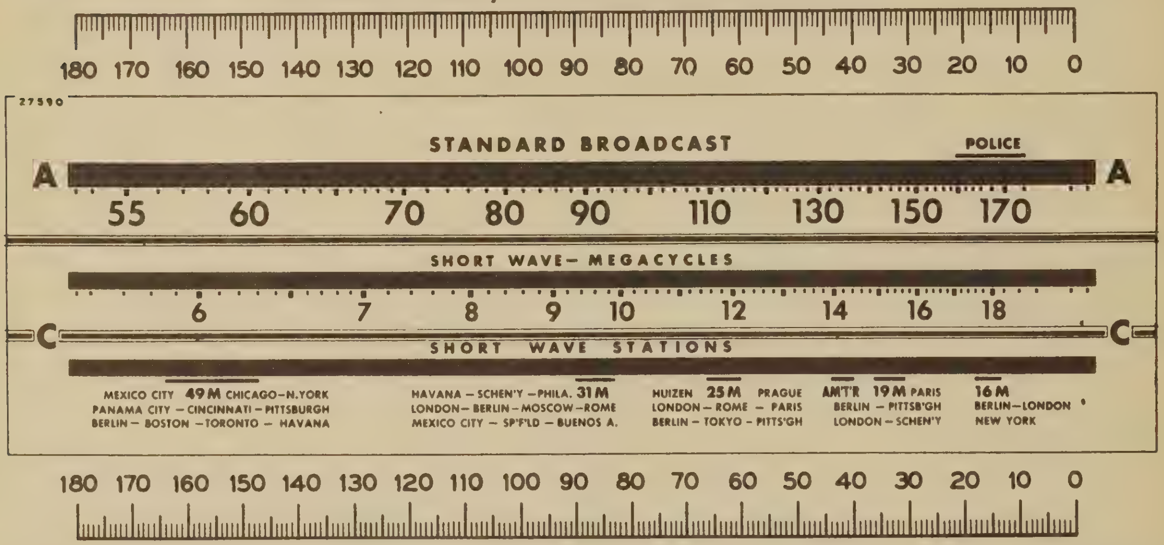




Precautionary Lead Dress.—(1) Dress 110-volt leads away from audio wiring. (2) All leads in vicinity of antenna and oscillator coils must be dressed away from the coils. (3) Electric Tuning lamp leads from push-button switch must be dressed against front apron. (4) Keep speaker leads away from Victrola jack. (5) Lead from C19 in electrolytic (RC-351F "R") must be dressed around left-end of push-button switch, and against chassis base. (6) The leads across back of chassis in RC-351F must be dressed under the electrolytic capacitor to prevent approaching the Victrola jack.

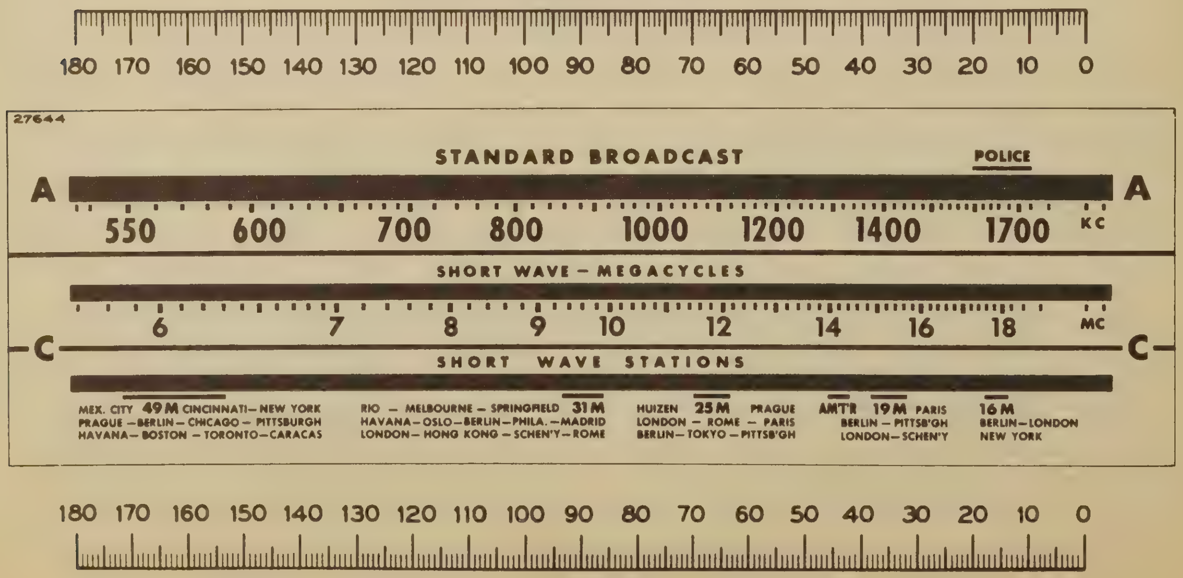
Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Calibration Scale, RC-351F and RC-351F "M"



The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the lower calibration to the same point on the upper calibration scale. For example, 28° on the calibration scale corresponds to 1,500 kc on "A" band in RC-351F and RC-351F "M."

Calibration Scale, RC-351F "R"



In RC-351F "R," 27.4° corresponds to 1,500 kc, and 15° corresponds to 18 mc.

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

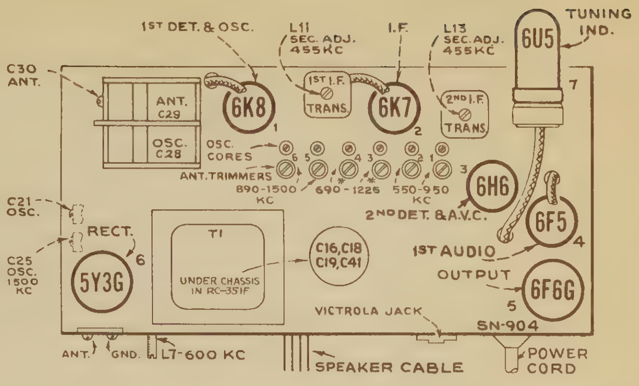
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



* In RC-351F, push buttons 3 and 4 cover 680-1,180 kc.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

RC-351F and RC-351F "M"

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	15.2 mc	15.2 mc (33.5°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28°) "A" band	C25 (osc.)
5	Follow "Adjustments for Electric Tuning."			

* Use minimum capacity peak if two peaks can be obtained.

** Rock gang slightly while adjusting C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 40.5° (14.29 mc), where a weaker signal should be received.

Note.—Oscillator tracks 455 kc above signal on both bands.

RC-351F "R"

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc (27.4°) "A" band	C25 (osc.) C30 (ant.)
4	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (148°) "A" band	L7 (osc.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms	18 mc	18 mc (15°) "C" band	C21 (osc.)*
7	Follow "Adjustments for Electric Tuning."			

* Rock gang slightly while peaking C21, and use minimum capacity peak if two peaks can be obtained on C21.

Note.—Oscillator tracks 455 kc above signal on both bands.

ADJUSTMENTS FOR ELECTRIC TUNING

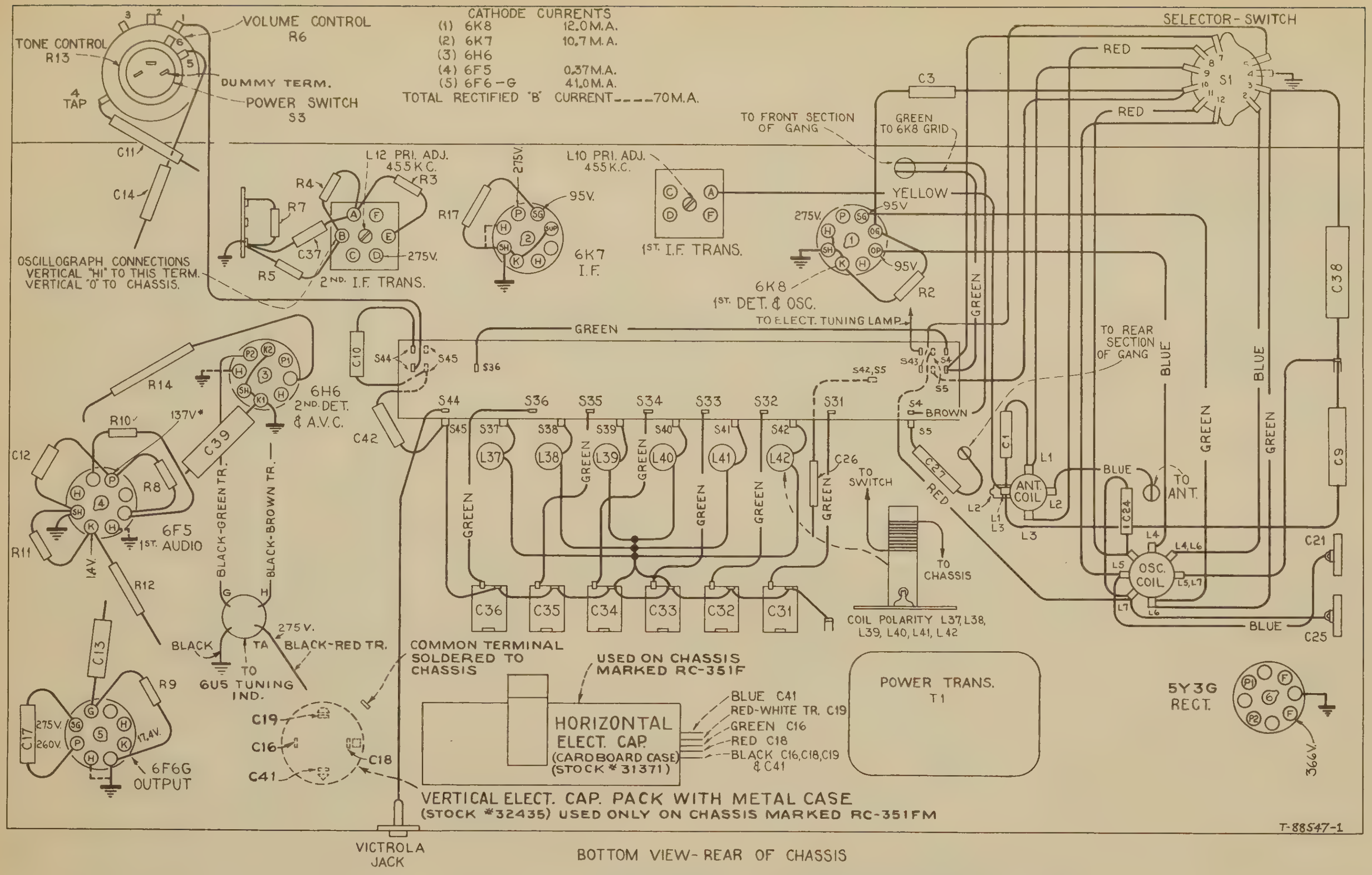
These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

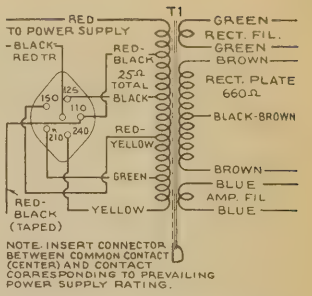
The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Use one or two feet of wire as an antenna to ensure sharp peaking.
3. Push in the dial-tuning button, and manually tune in the first station on the list.
4. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
5. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

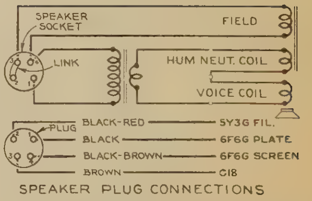
Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

6. Adjust for each of the remaining five stations in the same manner.
7. Make a final readjustment of the magnetite-cores.





Above.—Universal Power Transformer Connections. 110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.



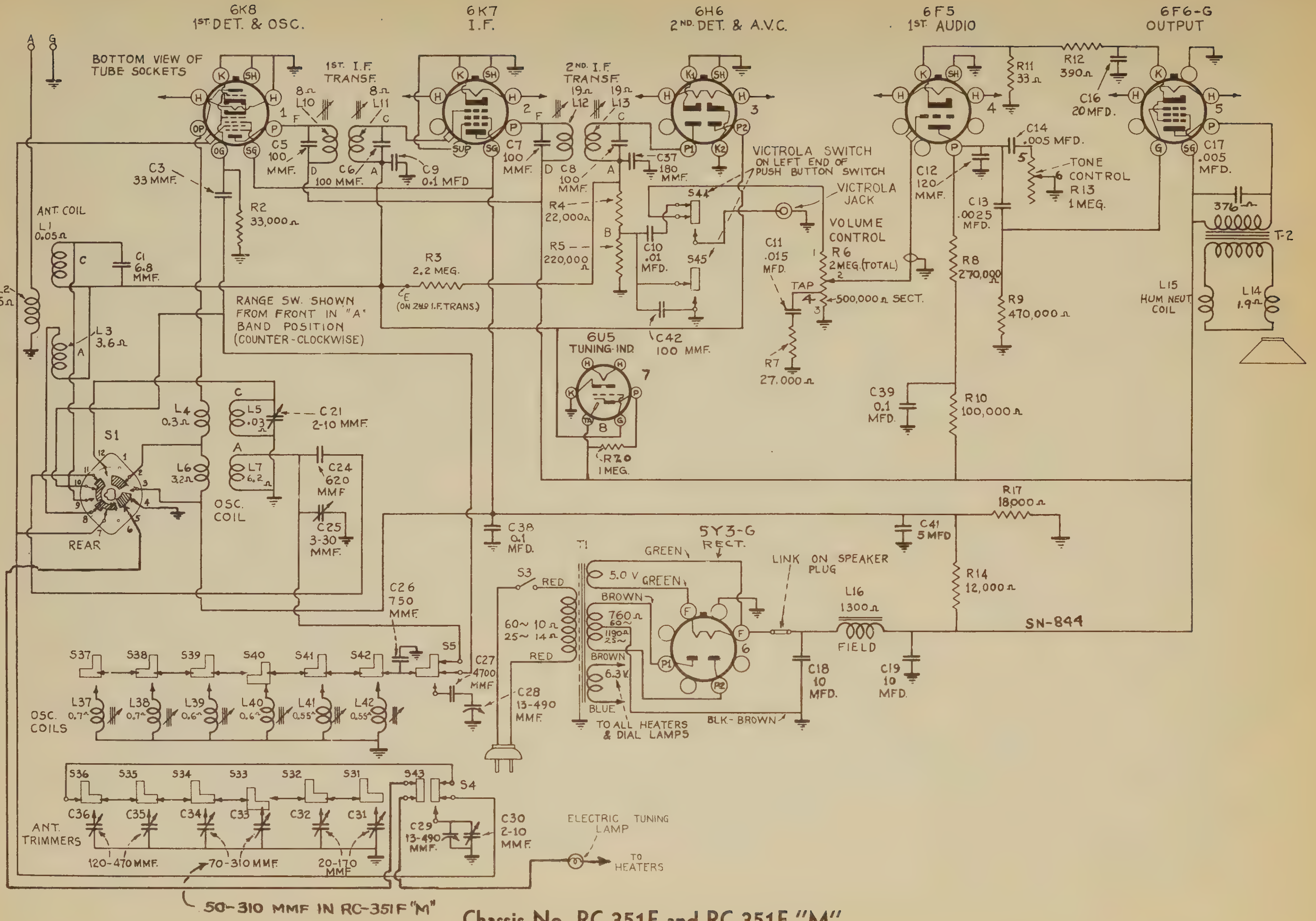
Above.—Connections and Colors of Loudspeaker and Cable.

Chassis No. RC-351F and RC-351F "M"

R-F Wiring Diagram and Socket Voltages

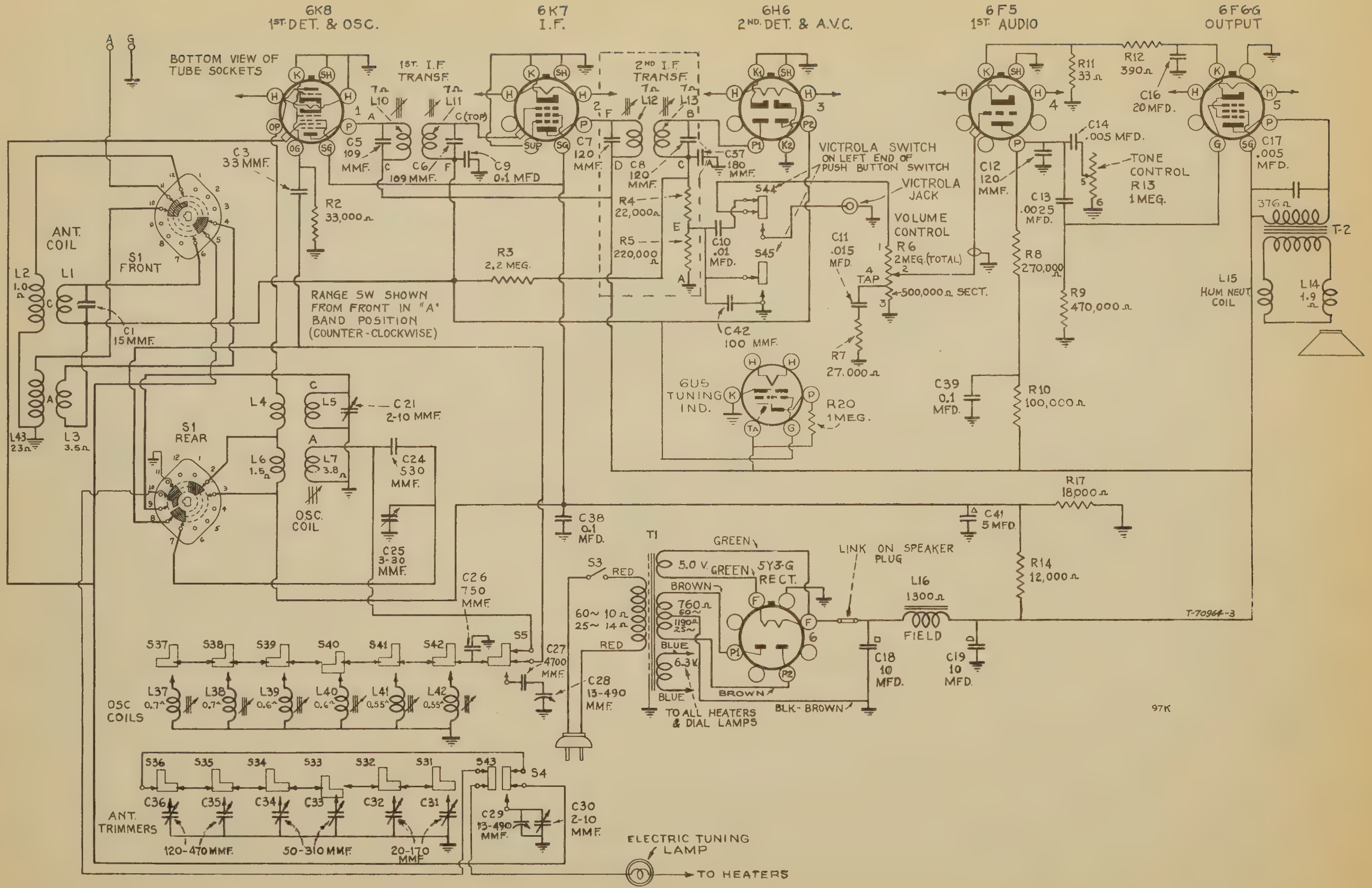
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading.



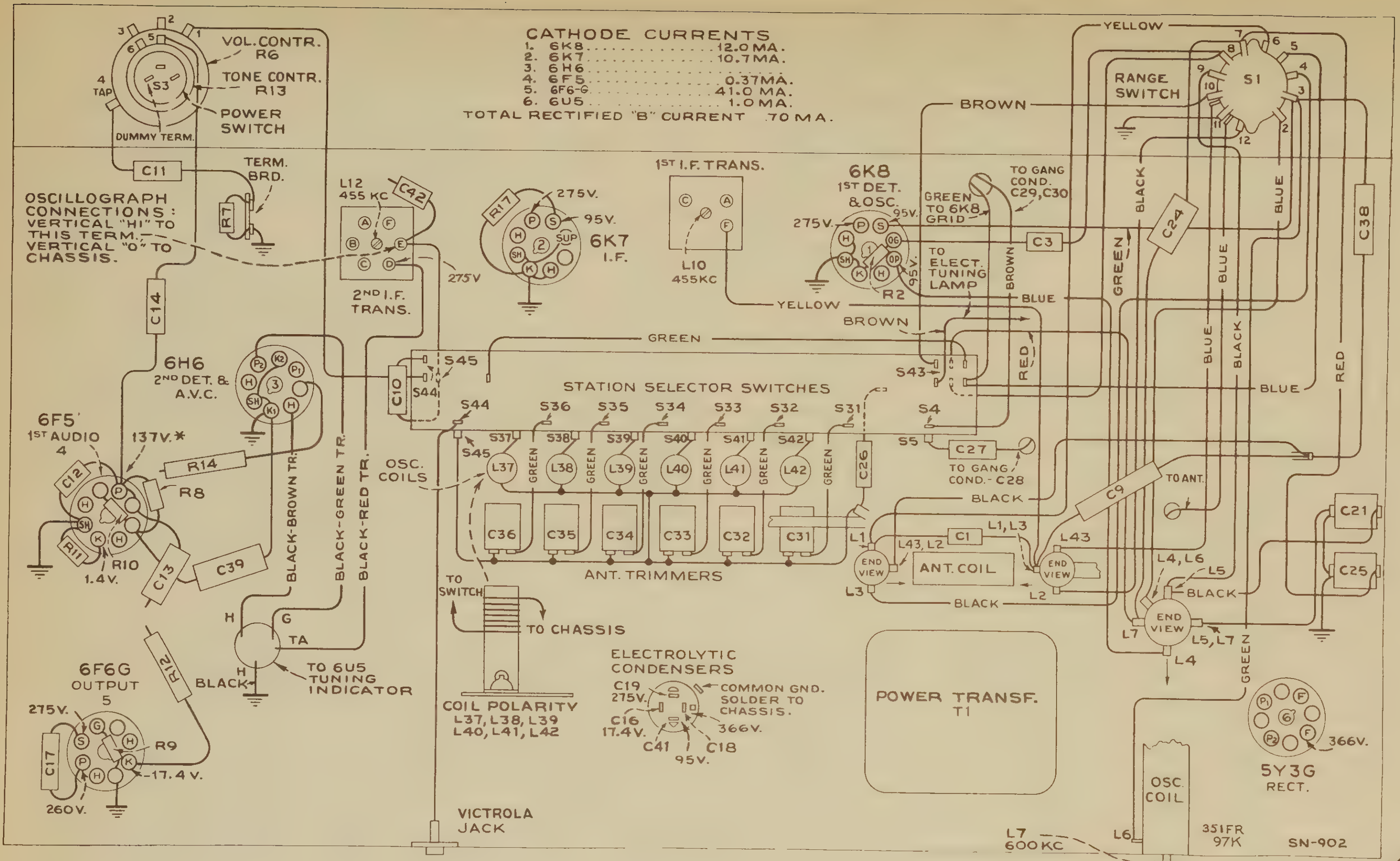
Chassis No. RC-351F and RC-351F "M"

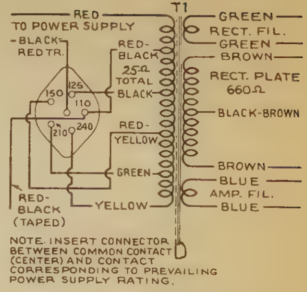
Schematic Circuit Diagram



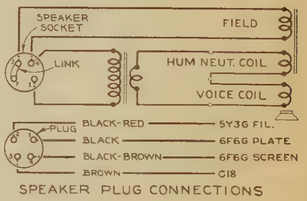
Chassis No. RC-351F "R"

Schematic Circuit Diagram





Above.—Universal Power Transformer Connections. 110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.



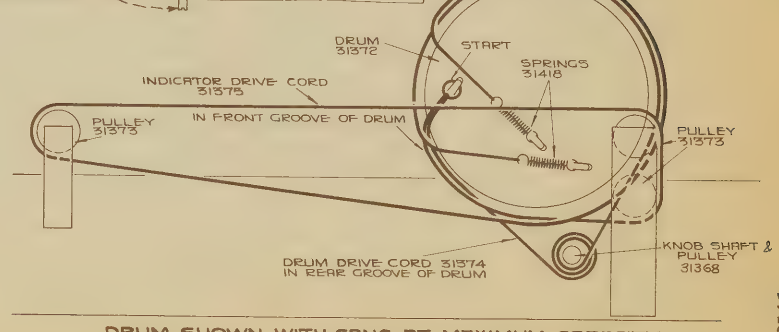
Above.—Connections and Colors of Loudspeaker and Cable.

Chassis No. RC-351F "R"

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading.


DRUM 31372
START
SPRINGS 31418
INDICATOR DRIVE CORD 31375
IN FRONT GROOVE OF DRUM
PULLEY 31373
PULLEY 31373
KNOB SHAFT & PULLEY 31368
DRUM DRIVE CORD 31374 IN REAR GROOVE OF DRUM

DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

CHASSIS ASSEMBLIES
(RC-351F, RC-351F "M," and RC-351F "R")

STOCK No.	DESCRIPTION	
30752	Bracket—Magic Eye mounting bracket	
14517	Board—Antenna—ground terminal board	
12110	Cap—Tube shield cap	
31379	Capacitor—Dual trimmer 2-10 mmfd. and 3-30 mmfd. (C21, C25)	
14079	Capacitor—6.8 mmfd. (C1) use in RC-351F and RC-351F "M" only	
12896	Capacitor—15 mmfd. (C1) used in RC-351F "R" only	
31387	Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F only	
32486	Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F "M" and RC-351F "R" only	
12948	Capacitor—33 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C42)	
30904	Capacitor—100 mmfd. (C5, C6, C7, C8) used in RC-351F and RC-351F "M" only	
14262	Capacitor—109 mmfd. (C5 and C6) used in RC-351F "R" only	
12404	Capacitor—120 mmfd. (C7 and C8) used in RC-351F "R" only	
12724	Capacitor—120 mmfd. (C12)	
13003	Capacitor—180 mmfd. (C37) mounted under chassis in RC-351F and RC-351F "M" only	
14712	Capacitor—180 mmfd. (C37) mounted in 2nd I-F transformer in RC-351F "R" only	
32492	Capacitor—530 mmfd. (C24) in RC-351F "R" only	
31381	Capacitor—620 mmfd. (C24) in RC-351F and RC-351F "M" only	
31435	Capacitor—750 mmfd. (C26)	
31399	Capacitor—4,700 mmfd. (C27)	
5107	Capacitor—.0025 mfd. (C13)	
4838	Capacitor—.005 mfd. (C14, C17)	
14393	Capacitor—.01 mfd. (C10)	
11315	Capacitor—.015 mfd. (C11)	
4839	Capacitor—0.1 mfd. (C9, C38, C39)	
31371	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (cardboard case type, mounted horizontally and used in RC-351F only)	
32485	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (metal case type, mounted vertically and used in RC-351F "R" and RC-351F "M" only)	
31382	Clip—Oscillator coil and core mounting clip	
31378	Coil—Antenna coil, "A" and "C" bands (L1, L2, L3) mounted vertically and used in RC-351F and RC-351F "M" only	
32488	Coil—Antenna coil, "A" and "C" bands (L1, L2, L3, L43) mounted horizontally and used in RC-351F "R" only	
31377	Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted vertically (no magnetite core) and used in RC-351F and RC-351F "M" only	
32489	Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted horizontally (with magnetite core) and used in RC-351F "R" only	
31383	Coil—Push-button oscillator coil (L41, L42)	
31384	Coil—Push-button oscillator coil (L39, L40) used in RC-351F only	
32487	Coil—Push-button oscillator coil (L39, L40) used in RC-351F "M" and "R"	
31385	Coil—Push-button oscillator coil (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31375	Cord—Indicator pointer drive cord	
31374	Cord—Variable condenser drum drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud for oscillator coils Stock Nos. 31383, 31384, 31385, 32487	
12800	Core—Adjustable core and stud for oscillator coil Stock No. 32489	
31372	Drum—Variable condenser drive cord drum and calibrator dial	
31480	Lamp—Dial lamp	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Drive cord pulley	
14671	Resistor—33 ohms, ¼ watt (R11)	
31388	Resistor—390 ohms, 1 watt (R12)	
31389	Resistor—12,000 ohms, wire-wound, 5 watts (R14)	
30151	Resistor—18,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7)	
12454	Resistor—33,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10)	
11398	Resistor—220,000 ohms, 1/10 watt (R5) used in RC-351F "R"	
12264	Resistor—220,000 ohms, ¼ watt (R5) used in RC-351F and RC-351F "M"	
12199	Resistor—270,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R9)	
12013	Resistor—1 meg., 1/10 watt (R20)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31418	Spring—Indicator, or drum drive cord tension spring	
31364	Socket—Dial lamp socket	
31365	Socket—Electric tuning indicator lamp socket (insulated)	
13871	Socket—Magic Eye socket	
14278	Socket—Pickup socket	
31251	Socket—Tube socket	
31367	Switch—Range switch (S1) used in RC-351F and RC-351F "M" only	
32490	Switch—Range switch (S1) used in RC-351F "R" only	
32498	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
30902	Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F and RC-351F "M" only	
14376	Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F "R" only	
30903	Transformer—2nd I-F transformer (L12, L13, C7, C8) used in RC-351F and RC-351F "M" only	
14283	Transformer—2nd I-F transformer (L12, L13, C7, C8, C37, R4, R5) used in RC-351F "R" only	
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	
31446	Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1)	

SPEAKER ASSEMBLIES
(RL-70-F3)

STOCK No.	DESCRIPTION	
13866	Cap—Dust cap for cone center	
12012	Coil—Field coil (L12)	
11469	Coil—Hum neutralizing coil (L14)	
31275	Cone—Speaker cone and voice coil (L13)	
31302	Plug—4-contact male plug	
31300	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
31301	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	

MISCELLANEOUS ASSEMBLIES

STOCK No.	DESCRIPTION	
12038	Band—Rubber band for "Magic Eye"	
31397	Button—Station selector push button	
31456	Cover—8 protective covers for push button markers	
31396	Dial—Dial scale (glass) used in RC-351F and RC-351F "M" only	
32356	Dial—Dial scale (glass) used in RC-351F "R" only	
31395	Escutcheon—Station selector escutcheon—less dial scale and push buttons	
31407	Escutcheon—"Magic Eye" or "Electric Tuning" indicator escutcheon	
31392	Indicator—Station selector indicator pointer	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31589	Marker—Station call letter markers for push buttons	
31458	Marker—"Dial Tuning" marker for push button	
31457	Marker—"Victrola" marker for push button	
31393	Screen—Station selector dial color screen and light diffuser	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 31355 and 30773	
30330	Spring—Retaining spring for knob Stock No. 31391	
31394	Stop—Indicator pointer slide stop	

RCA Victor

MODEL 98K

Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 17—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,000 kc
"Short Wave" (C)	7,000-22,000 kc

R-F ALIGNMENT FREQUENCIES

"Short Wave" (C)	20,000 kc (osc., ant.)
"Medium Wave" (B)	6,100 kc (osc.)
"Broadcast" (A)	600 kc (osc.), 1,500 kc (osc., ant.)

Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1) RCA—6A8	First Detector
(2) RCA—6J7	Oscillator
(3) RCA—6K7	Intermediate Amplifier
(4) RCA—6H6	Second Det., A.V.C., and Muting
(5) RCA—6F5	Audio Amplifier
(6) RCA—6F6	Power Output
(7) RCA—6G5 or 6U5	"Magic Eye" Tuning Tube
(8) RCA—5W4	Full-Wave Rectifier

Pilot Lamps (3)	one 6-8 volts, .15 amp., and two Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 80 watts
Rating B	105-125 volts, 25 cycles, 80 watts
Rating C	105-125/140-160/200-250 volts, 50-60 cycles, 80 watts

POWER OUTPUT

Undistorted	2.5 watts
Maximum	4.5 watts

LOUDSPEAKER

Type	12-inch Electrodynamic
Impedance (v.c.)	2.2 ohms at 400 cycles

Mechanical Specifications

Height	40 inches
Width	26⅞ inches
Depth	13 7/32 inches
Weight (net)	54 pounds
Weight (shipping)	76 pounds
Chassis Base Dimensions	15⅝ inches x 8½ inches x 3⅛ inches
Over-all Chassis Height	8¼ inches
Operating Controls	(1) Power Switch-Tone; (2) Volume; (3) Tuning; (4) Range Selector, left to right, "A," "B," "C"; Ten Push Buttons; left to right, Victrola-Attachment Switch, Eight Station Buttons, Dial-Tuning Button.
Tuning Drive Ratio	18 to 1

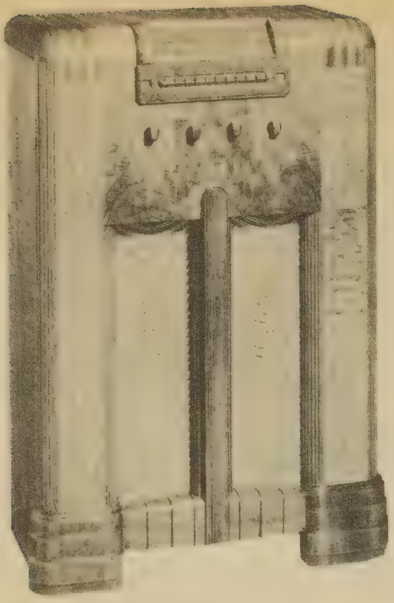
General Description

This receiver employs an eight-tube, three-band, "Magic Brain" superheterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Features of design include electric tuning for eight broadcast stations; a link-coupled antenna circuit on "A" band; magnetite-core i-f transformers and magnetite-core "A" band oscillator coil; automatic volume control; jack and switch for Victrola Attachment; "Magic Eye" tuning tube; 12-inch, dust-proof electrodynamic loudspeaker; aural-compensated audio volume control; continuously variable high-frequency tone control; provision for armchair control attachment; new straight-line dial; illuminated band indicator; noise-reducing adjustment on "A" band and noise reduction on "C" band with RCA Victor Master Antenna; temperature-stabilized capacitors.

Trademarks "Magic Eye," "Magic Brain," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition

Printed in U. S. A.



Model 98K

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

Precautionary Lead Dress.—(1) The lead from the left pilot light should be kept behind the bulb and toward the "Magic Eye," to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to Victrola switch should be kept away from the switch terminals and jack.

Victrola Attachment.—A jack located near the "Magic Eye" tube is provided for connecting a Victrola Attachment into the audio-amplifying circuit. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise-reducing trimmer should be made in the customer's home, with the Master Antenna connected to receiver.

This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

Calibration Scale

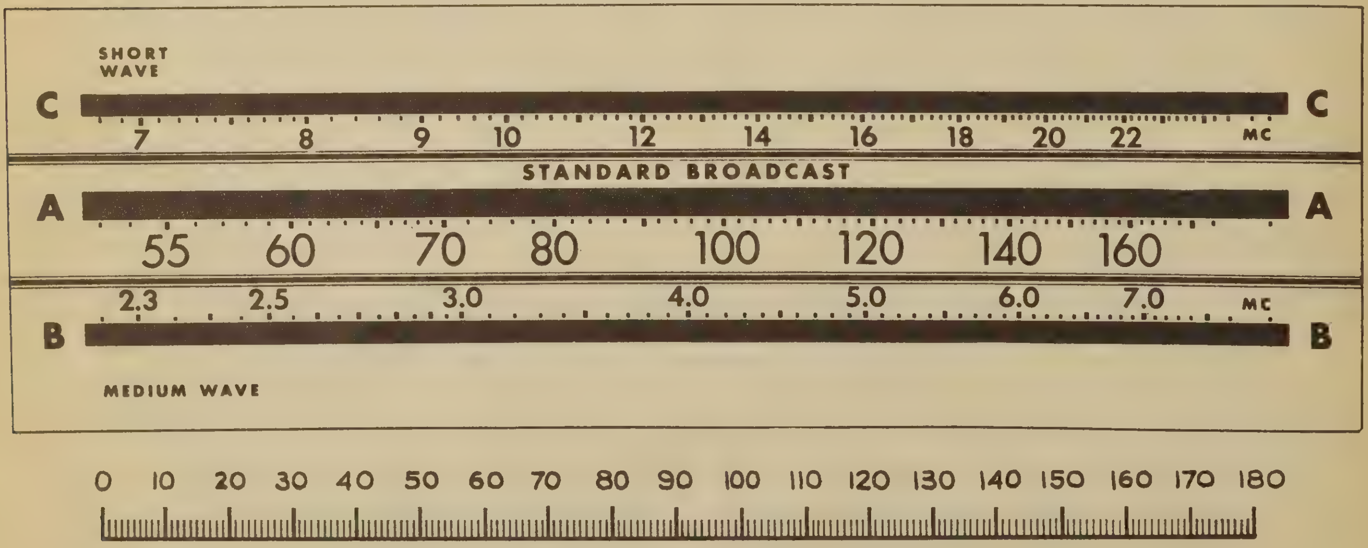


Figure 1—Model 98K Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151.5° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

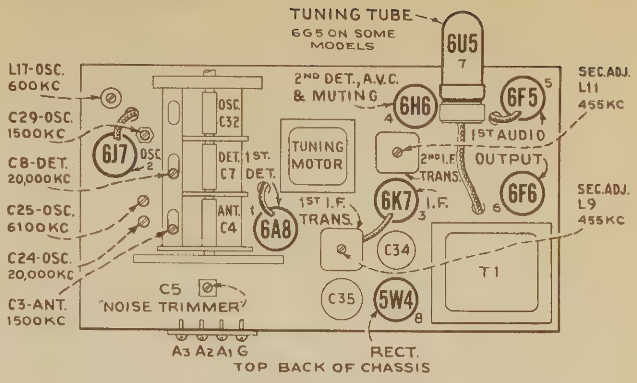


Figure 2—Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-oscillator to —	Tune test-oscillator to —	Range Selector	Set tuning gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L10, L11 (2nd I-F Transformer)
No. 2	6A8 Det. grid cap in series with .01 mfd.	455 kc	"A"		L8, L9 (1st I-F Transformer)
No. 3	A2. Connect A1 to chassis.	20 mc	"C"	20 mc (147.5°)	C24 (osc.)* C8 (det.)†
No. 4	A2, in series with 100 mmfd. Connect A3 to chassis.	6,100 kc	"B"	6,100 kc (145.5°)	C25 (osc.)**
No. 5	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.) C3 (ant.)
No. 6	A2, in series with 100 mmfd. Connect A3 to chassis.	600 kc	"A"	600 kc (29.5°)	L17 (osc.)
No. 7	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C8.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

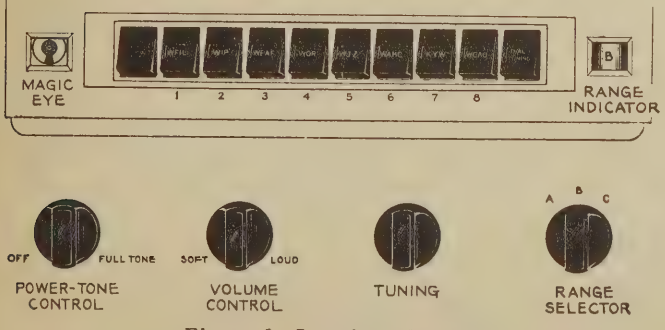


Figure 3—Location of Controls

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

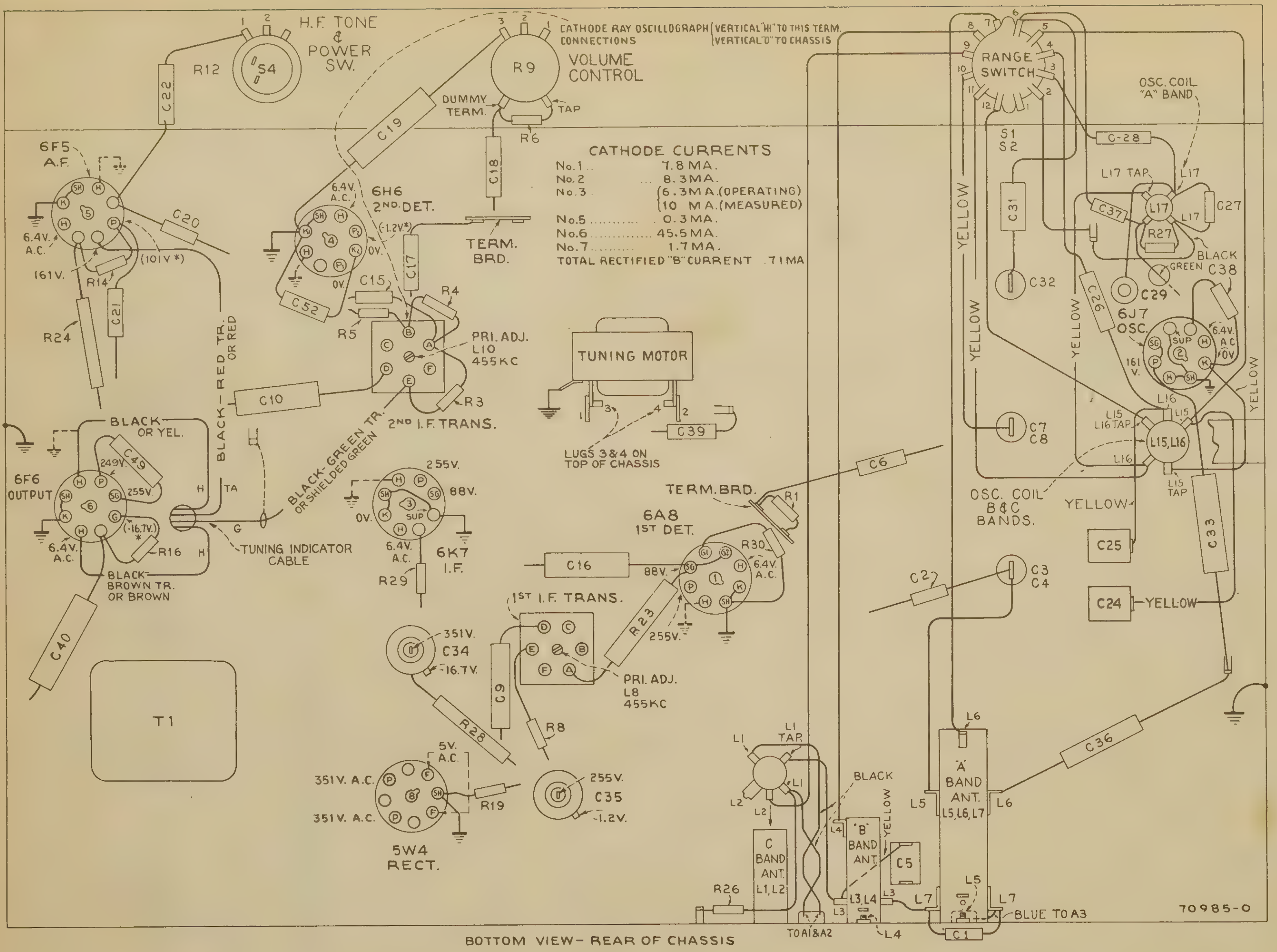
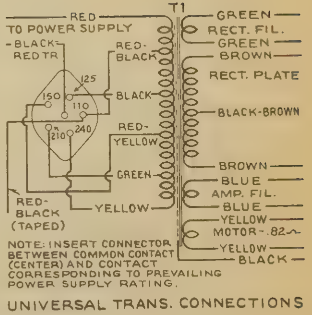


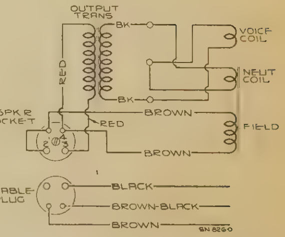
Figure 4—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.



Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)



Above — Connections and Colors of Loudspeaker and Cable.

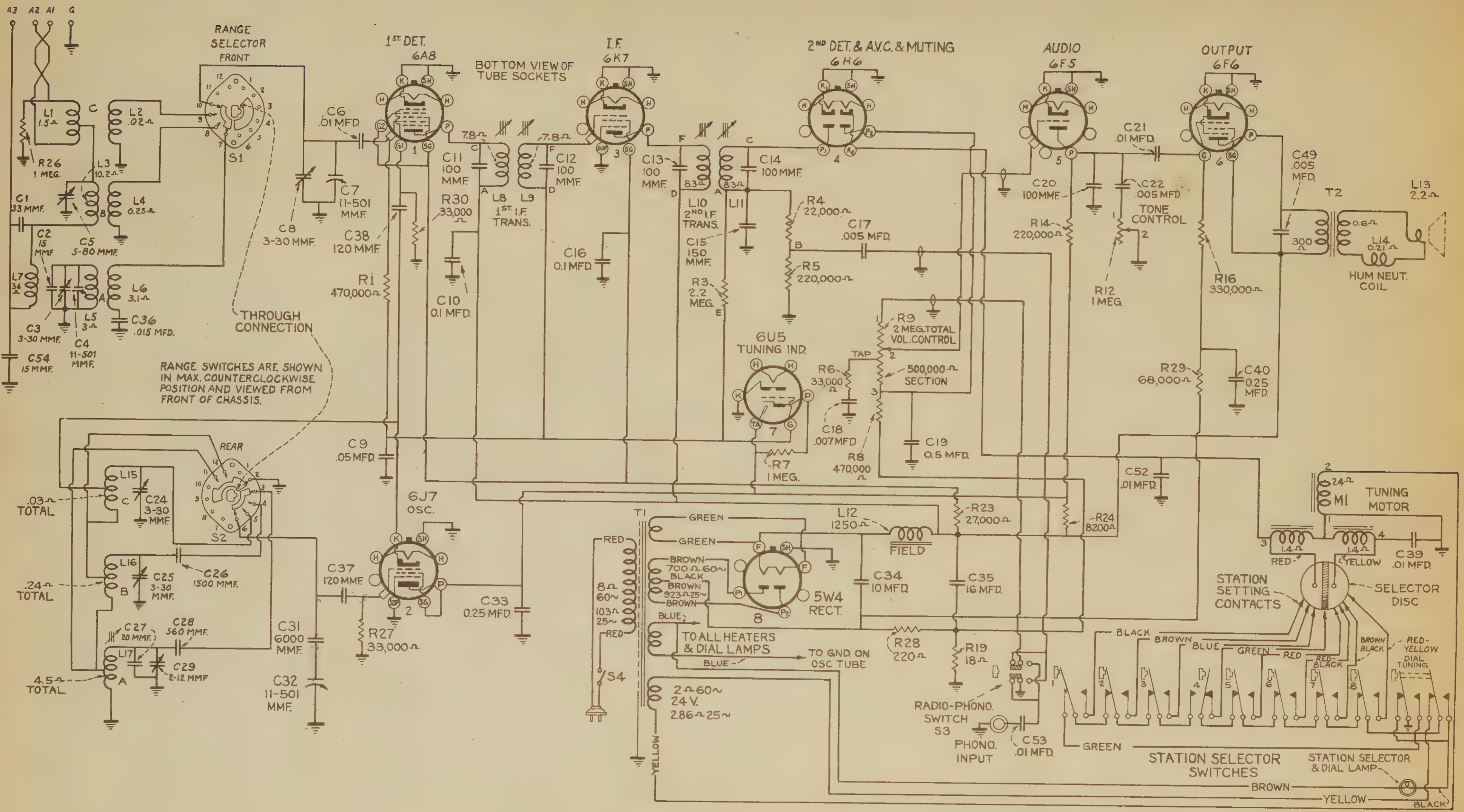


Figure 5—Schematic Circuit Diagram

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal horizontal position.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

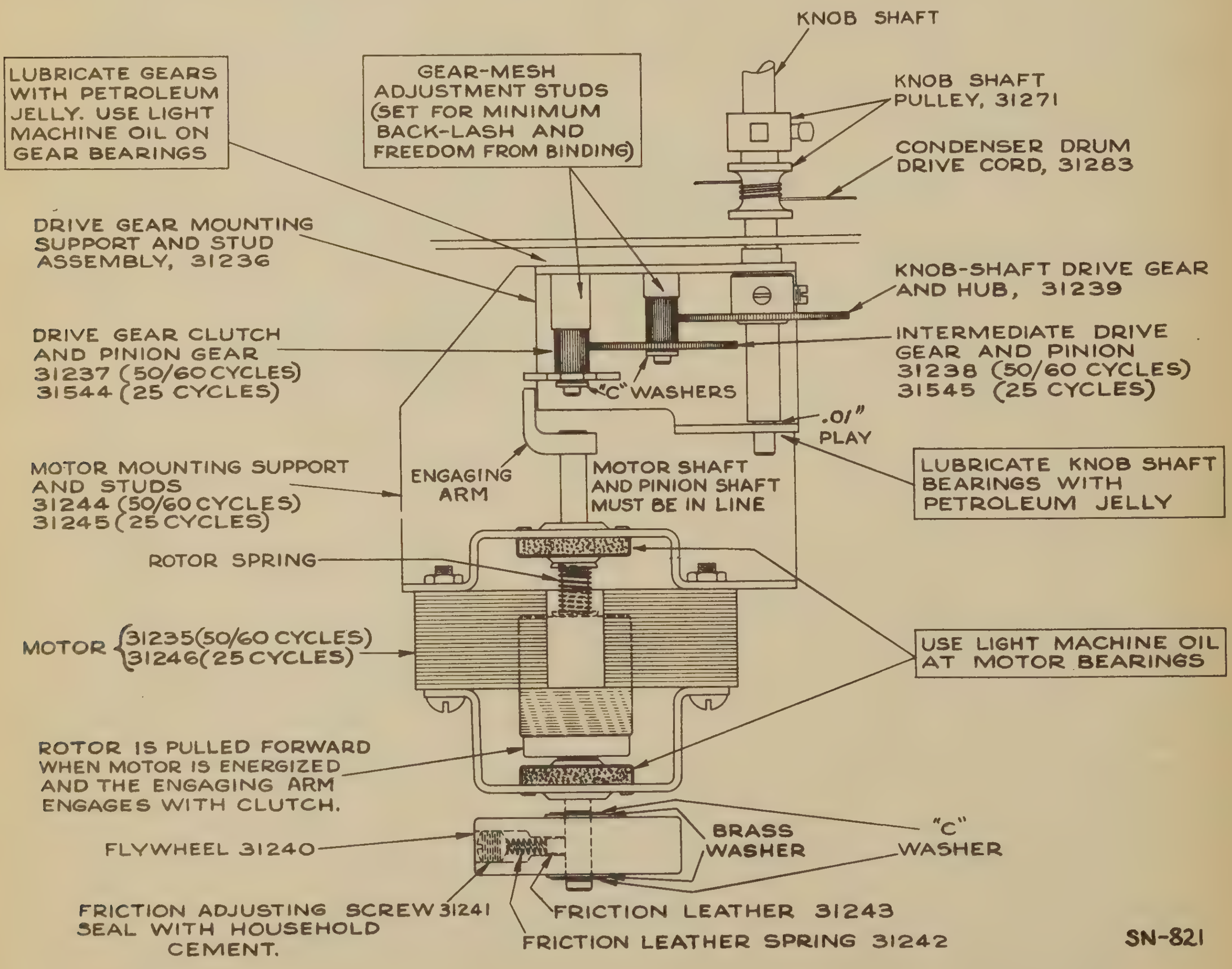

KNOB SHAFT
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING)
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
.01" PLAY
MOTOR MOUNTING SUPPORT AND STUDS 31244 (50/60 CYCLES) 31245 (25 CYCLES)
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING
MOTOR {31235(50/60 CYCLES) 31246(25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
FRICTION LEATHER 31243
FRICTION LEATHER SPRING 31242
SN-821

Figure 6—Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

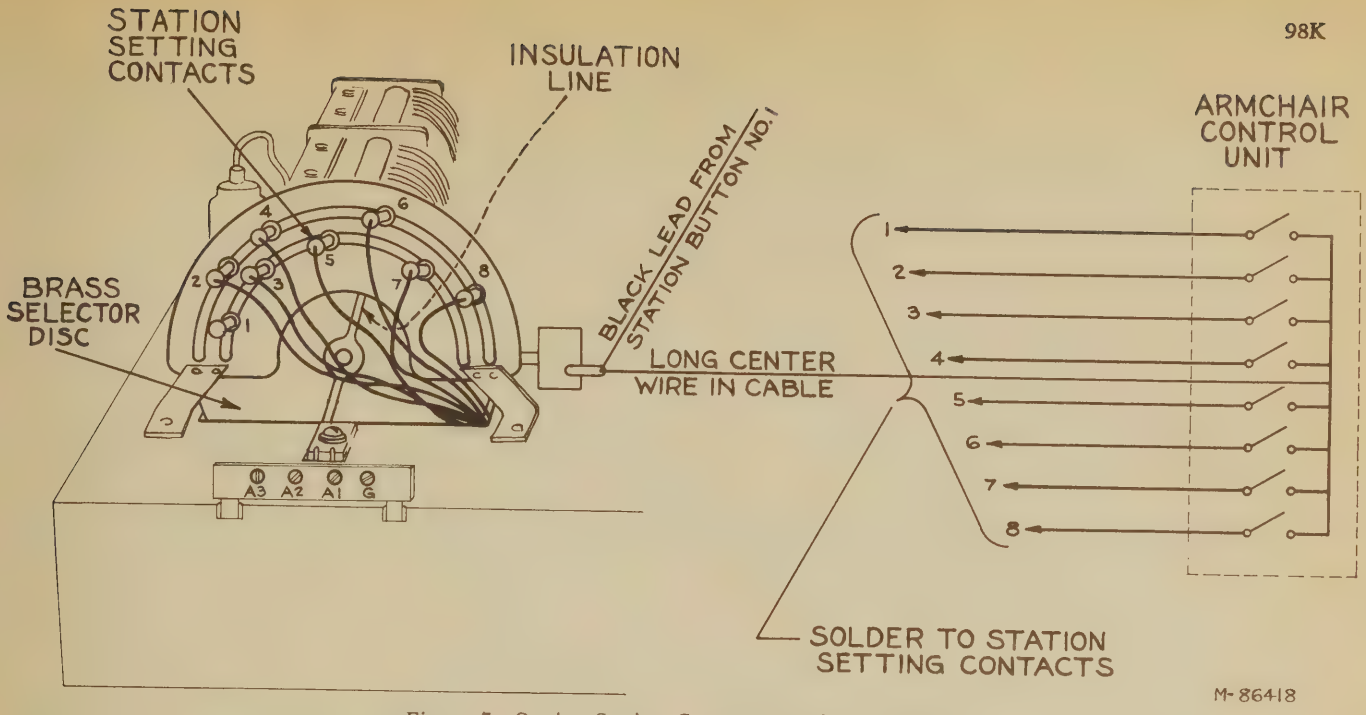


Figure 7—Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Colors of Leads from Push Buttons to Station-Setting Contacts

Station Button	Color of Lead To Station-Setting Contact	Station Button	Color of Lead To Station-Setting Contact
No. 1	Black	No. 5	Red
No. 2	Brown	No. 6	Red-black
No. 3	Blue	No. 7	Brown-black
No. 4	Green	No. 8	Red-yellow

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication

Motor bearings and **gear bearings;** use light machine oil. **Gear faces;** use "Pure Oil No. 611" or petroleum jelly. **Dial-indicator pulleys** and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver as shown in figure 7 it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. In some cases one of the other seven station buttons on the set may be used in place of No. 1 button for the operation of the Armchair Control.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Model G8A Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.

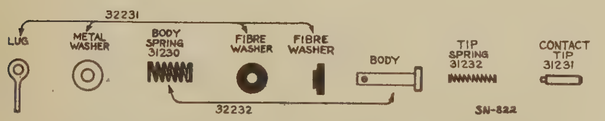


Figure 8—(Above) Component Parts of Station-Setting Contact

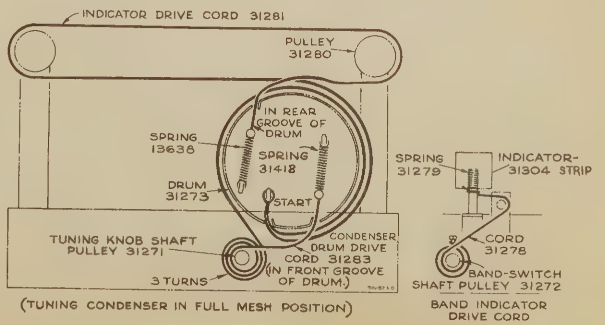

INDICATOR DRIVE CORD 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
3 TURNS
(TUNING CONDENSER IN FULL MESH POSITION)
SPRING 31279
INDICATOR-31304 STRIP
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD

Figure 9—(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch

SN-823

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31253	Board—Antenna and ground terminal board....	
12714	Capacitor—Adjustable trimmer, 2-12 mmfd. (C29)	
31292	Capacitor—Dual adjustable trimmer, 3-30 mmfd. each section (C24, C25)........	
31252	Capacitor—Adjustable trimmer, 5-80 mmfd. (C5)	
12896	Capacitor—15 mmfd. (C2, C54)........	
31432	Capacitor—20 mmfd. (C27)	
12948	Capacitor—33 mmfd. (C1)	
12720	Capacitor—100 mmfd. (C20)	
31270	Capacitor—100 mmfd. (C11, C12, C13, C14)..	
12724	Capacitor—120 mmfd. (C37, C38)........	
12725	Capacitor—150 mmfd. (C15)	
31433	Capacitor—560 mmfd. (C28)	
31033	Capacitor—1,500 mmfd. (C26)........	
31405	Capacitor—6,000 mmfd. (C31)........	
4838	Capacitor—.005 mfd. (C17, C22, C49).......	
5148	Capacitor—.007 mfd. (C18)........	
14393	Capacitor—.01 mfd. (C6, C21, C39, C52, C53).	
11315	Capacitor—.015 mfd. (C36)........	
4886	Capacitor—.05 mfd. (C9)........	
4839	Capacitor—0.1 mfd. (C10, C16)........	
12484	Capacitor—0.25 mfd. (C33, C40)........	
30867	Capacitor—0.5 mfd. (C19)........	
11203	Capacitor—10 mfd. (C34)........	
5212	Capacitor—16 mfd. (C35)........	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft (50-60 cycle models only)........	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft (25-cycle models only)........	
31293	Coil—"A" band antenna coil (L5, L6, L7)....	
31296	Coil—"A" band oscillator coil (L17)........	
31294	Coil—"B" band antenna coil (L3, L4).......	
31295	Coil—"B" and "C" band oscillator coil (L15, L16)	
31297	Coil—"C" band antenna coil (L1, L2).......	
31290	Condenser—3-gang variable condenser (C3, C4, C7, C8, C32)........	
31231	Contact—Contact tip for station-setting contact.	
31260	Core—Adjustable core and stud for "A" band oscillator coil	
31269	Core—Adjustable core and stud for i-f transformers	
31273	Drum—Indicator drive cord drum........	
31240	Flywheel—Variable condenser drive motor flywheel	
31238	Gear—Variable condenser intermediate drive gear and pinion gear (50-60 cycle models only)...	
31545	Gear—Variable condenser intermediate drive gear and pinion gear (25-cycle models only).....	
31239	Gear—Variable condenser knob shaft drive gear and hub	
11891	Lamp—Dial lamp	
31480	Lamp—Electric tuning adjustment indicator lamp	
31243	Leather—Friction leather for flywheel........	
31246	Motor—Variable condenser drive motor (M1)—25-cycle models only........	
31235	Motor—Variable condenser drive motor (M1)—50-60 cycle models only........	
31228	Plate—Station-setting contact plate—less contacts	
31227	Plate—Station-setting contact mounting plate—mounts on rear of variable condenser........	
5040	Plug—4-contact female plug for speaker cable..	
31271	Pulley—Motor pulley	
31272	Pulley—Range switch pulley........	
14660	Resistor—18 ohms, ¼ watt (R19)........	
31431	Resistor—220 ohms, wire wound, 1.5 watts (R28)	
31430	Resistor—8,200 ohms, wire wound, 1.5 watts (R24)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)......	
14167	Resistor—27,000 ohms, 2 watts (R23)........	
11300	Resistor—33,000 ohms, 1/10 watt (R6, R27, R30)	
12010	Resistor—68,000 ohms, 1/10 watt (R29).....	
11398	Resistor—220,000 ohms, 1/10 watt (R14)....	
12264	Resistor—220,000 ohms, ¼ watt (R5)........	
11297	Resistor—330,000 ohms, 1/10 watt (R16)....	
11452	Resistor—470,000 ohms, 1/10 watt (R1, R8)..	
12013	Resistor—1 meg., 1/10 watt (R7, R26)......	
5131	Resistor 2.2 meg., 1/10 watt (R3)........	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft........	
31241	Screw—¼ x 20 headless, cone point set screw for flywheel	
14350	Screw—No. 8-32 square head set screw for selector rotor disc........	
4119	Screw—No. 8-32 headless set screw for gear, Stock No. 31239........	
4669	Screw—No. 8-32 square heat set screw for pulley, Stock Nos. 31271 and 31272, and drum, Stock No. 31273........	
31364	Socket—Dial lamp socket........	
13871	Socket—"Magic Eye" socket........	
31251	Socket—Radiotron socket........	
31365	Socket—Tuning indicator lamp insulated socket.	
31232	Spring—Station-setting contact tip spring......	
12007	Spring—Retaining spring for core, Stock No. 31269	
31230	Spring—Station-setting contact body spring....	
31262	Spring—Tension spring for core, Stock No. 31260	
31242	Spring—Tension spring for flywheel........	
31244	Support—Variable condenser motor mounting support and studs—for 50-60 cycle models only	
31245	Support—Variable condenser motor mounting support and studs—for 25-cycle models only.	
31236	Support—Variable condenser drive gear mounting support and studs assembly........	
31291	Switch—Range switch (S1, S2)........	
31248	Tone Control—H.f. tone control and power switch (R12, S4)........	
31267	Transformer—First i-f transformer (L8, L9, C11, C12)	
31268	Transformer—Second i-f transformer (L10, L11, C13, C14)........	
31299	Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1)........	
31298	Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1)........	
31454	Volume Control (R9)........	
	SPEAKER ASSEMBLIES (RL-70-F3)	
13866	Cap—Dust cap for cone center........	
12012	Coil—Field coil (L12)........	
11469	Coil—Hum neutralizing coil (L14)........	
31275	Cone—Speaker cone and voice coil (L13).....	
31302	Plug—4-contact male plug........	
31300	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke........	
31301	Transformer—Output transformer (T2).......	
14357	Washer—Spring washer to hold field coil......	
	MISCELLANEOUS ASSEMBLIES	
31303	Bracket—Band indicator mounting bracket complete except less band indicating strip, cord, and tension spring........	
31282	Bracket—"Magic Eye" bracket and holder.....	
31358	Button—Station selector switch push button...	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip....	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip.	
31278	Cord—Band indicator drive cord........	
31281	Cord—Indicator pointer drive cord........	
31283	Cord—Variable condenser drum drive cord.....	
31456	Cover—Eight protective covers for push button markers	
31359	Cushion—Station selector push button rubber cushion	
31451	Dial—Station selector dial and crystal........	
31356	Escutcheon—Station selector dial escutcheon only—less dial and push buttons........	
31304	Indicator—Band indicator strip........	
31305	Indicator—Station selector indicator pointer and slide	
31355	Knob—Range switch, volume control, tone control, or station selector knob........	
31346	Lock—Push button switch lock plate—comprising 10 contact locks in one strip........	
31458	Marker—"Dial Tuning" push button marker...	
31457	Marker—"Record Player" push button marker..	
31589	Markers—Station call letter markers........	
31280	Pulley—Indicator pointer drive cord pulley....	
14887	Retainer—Indicator pointer drive cord pulley retainer	
3993	Screw—No. 6-32 square head set screw for pointer slide stop........	
11210	Screw—Chassis mounting screws, washers, and lockwashers for one chassis........	
31287	Shaft—Indicator pointer slide shaft........	
31347	Socket—Pickup socket and bracket........	
13638	Spring—Indicator pointer drive cord tension spring	
31418	Spring—Variable condenser drive cord tension spring	
14270	Spring—Retaining spring for knob, Stock No. 31355	
31279	Spring—Tension spring for band indicator.....	
31970	Spring—Tension spring for push button switch latch bar	
31307	Stop—Indicator pointer slide stop........	
31360	Switch—Pickup switch for mounting on push button switch assembly (S3)........	
32229	Switch—Station selector push button switch and bracket complete	

RCA Victor

MODELS 99K and 99T

Nine-Tube, Three-Band, Electric Tuning, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 20—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,000 kc
"Short Wave" (C)	7,000-22,000 kc

R-F ALIGNMENT FREQUENCIES

"Short Wave" (C)	20,000 kc (osc., ant.)
"Medium Wave" (B)	6,100 kc (osc.)
"Broadcast" (A)	600 kc (osc.), 1,500 kc (osc., ant.)

Intermediate Frequency .... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-6A8	First Detector
(2) RCA-6J7	Oscillator
(3) RCA-6K7	Intermediate Amplifier
(4) RCA-6Q7	Second Det., A.V.C., Muting, Audio Amplifier
(5) RCA-6F5	Phase Inverter, Audio Amplifier
(6) RCA-6F6	Power Output
(7) RCA-6F6	Power Output
(8) RCA-6G5 or 6U5	"Magic Eye" Tuning Tube
(9) RCA-5T4	Full-Wave Rectifier

Pilot Lamps (3) .... One Mazda 47, 6-8 volts, .15 amp.; two Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 120 watts
Rating B	105-125 volts, 25-30 cycles, 120 watts
Rating C	105-125/140-160/200-250 volts, 50-60 cycles, 120 watts

POWER OUTPUT

Undistorted	10 watts
Maximum	12 watts

LOUDSPEAKER

Type	Electrodynamic
Impedance (v.c.)	2.2 ohms at 400 cycles

Mechanical Specifications

Cabinet Dimensions	**Model 99T**	**Model 99K**
Height	$20\frac{5}{16}$ inches	41 inches
Width	17⅝ inches	27⅝ inches
Depth	$11\frac{1}{16}$ inches	$13\frac{5}{16}$ inches
Weights		
Net	30 pounds	65 pounds
Shipping	40 pounds	82 pounds

Chassis Base Dimensions .... 15⅝ inches x 8½ inches x 3⅛ inches

Over-all Chassis Height .... 8¼ inches

Operating Controls .... (1) Power Switch-Tone; (2) Volume; (3) Tuning; (4) Range Selector, left to right, "A," "B," "C"; Ten Push Buttons; left to right, Victrola Attachment Switch, Eight Station Buttons, Dial-Tuning Button.

Tuning Drive Ratio .... 18 to 1

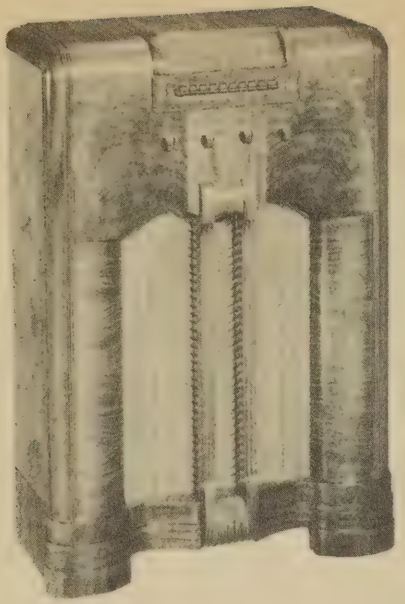
General Description

These receivers employ a nine-tube, three-band "Magic Brain" superheterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Model 99T is a table-type, with 8-inch speaker. Model 99K is a console type, with 12-inch speaker. Features of design include electric tuning for eight broadcast stations; push-pull power output stage; a link-coupled antenna circuit on "A" band; magnetite-core i-f transformers and magnetite-core "A" band oscillator coil; automatic volume control; jack and switch for Victrola Attachment; "Magic Eye" tuning tube; dust-proof electrodynamic loudspeaker; aural-compensated audio volume control; continuously variable high-frequency tone control; provision for armchair control attachment; new straight-line dial; illuminated band indicator; noise reducing adjustment on "A" band and noise reduction on "C" band with RCA Victor Master Antenna; temperature-stablized capacitors.

Trademarks "Magic Eye," "Magic Brain," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

First Edition

Printed in U. S. A.



Model 99K

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

Victrola Attachment. — A jack located near the "Magic Eye" tube is provided for connecting a Victrola Attachment into the audio-amplifying circuit. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections

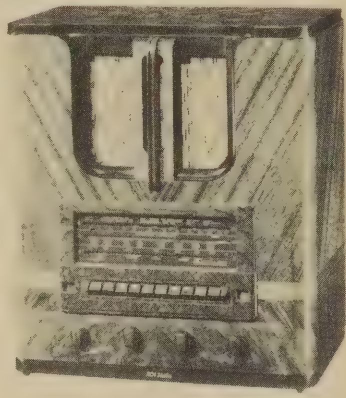
RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment. — After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise-reducing trimmer should be made in the customer's home, with the Master Antenna connected to receiver.

This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.



Model 99T

Calibration Scale

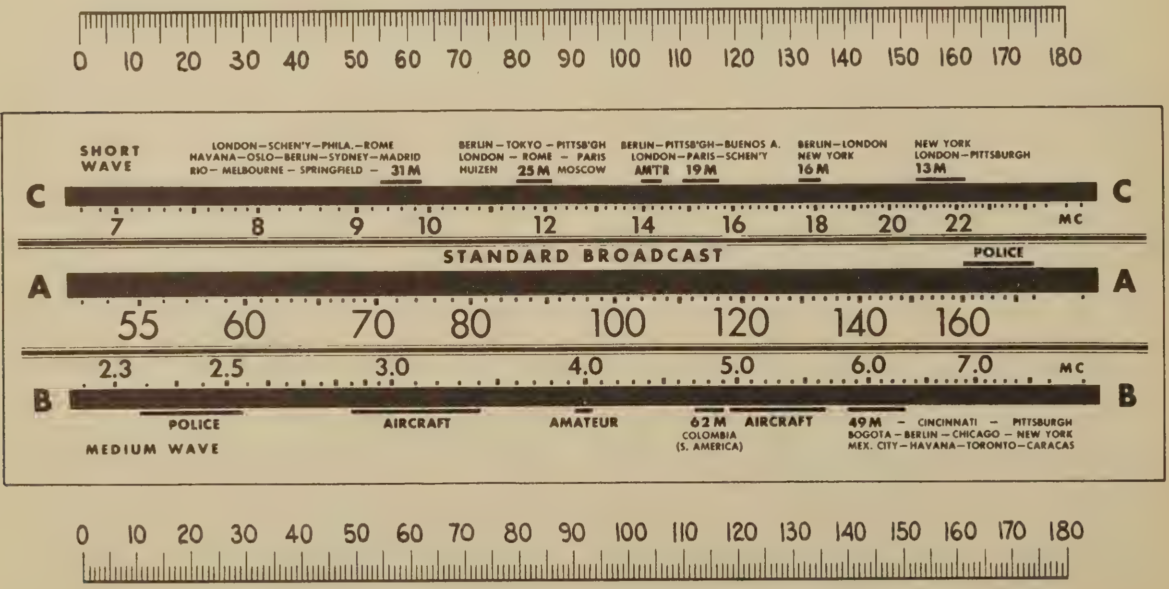


Figure 1—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 90° on the calibration scale corresponds to approximately 12.5 mc on "C" band, and 940 kc on "A" band, etc. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

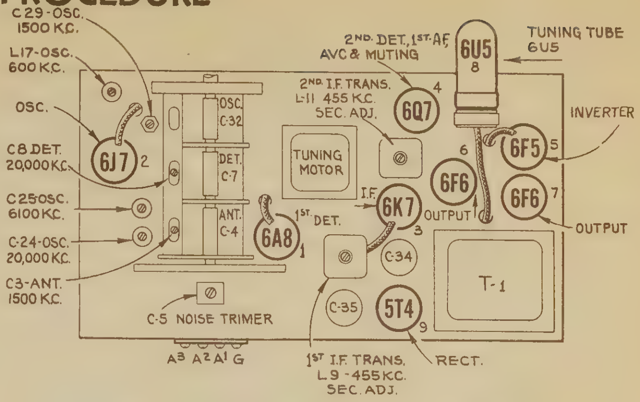


Figure 2—Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-oscillator to —	Tune test-oscillator to —	Range Selector	Set tuning gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L10, L11 (2nd I-F Transformer)
No. 2	6A8 Det. grid cap in series with .01 mfd.	455 kc	"A"		L8, L9 (1st I-F Transformer)
No. 3	A2. Connect A1 to chassis.	20 mc	"C"	20 mc (147.5°)	C24 (osc.)* C8 (det.)†
No. 4	A2, in series with 100 mmfd. Connect A3 to chassis.	6,100 kc	"B"	6,100 kc (145.5°)	C25 (osc.)**
No. 5	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.) C3 (ant.)
No. 6	A2, in series with 100 mmfd. Connect A3 to chassis.	600 kc	"A"	600 kc (29.5°)	L17 (osc.)
No. 7	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C8.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

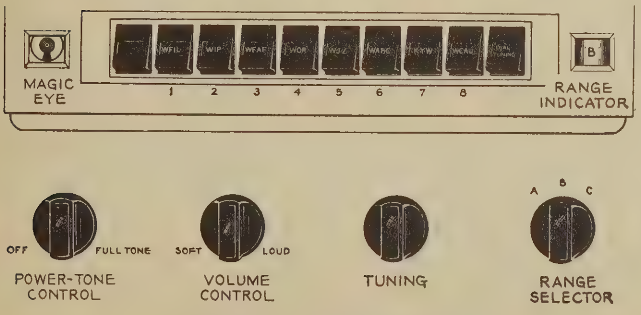


Figure 3—Location of Controls

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

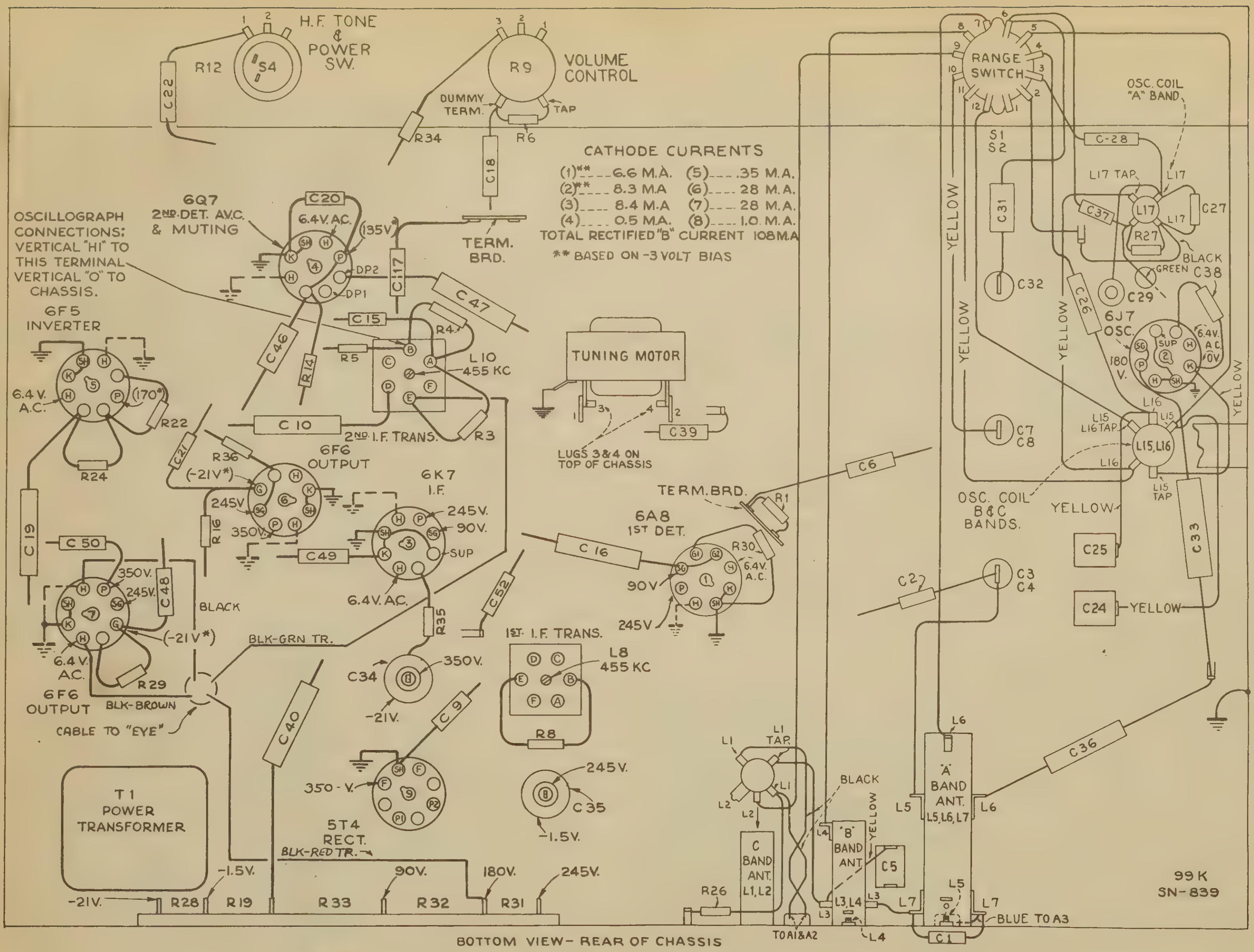
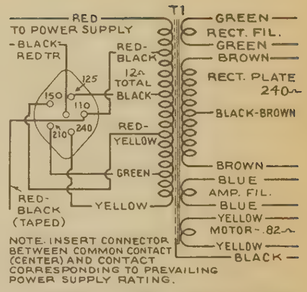


Figure 4—R-F Wiring Diagram and Socket Voltages

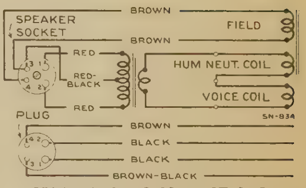
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)



SPEAKER PLUG CONNECTIONS

Above — Connections and Colors of Loudspeaker and Cable.

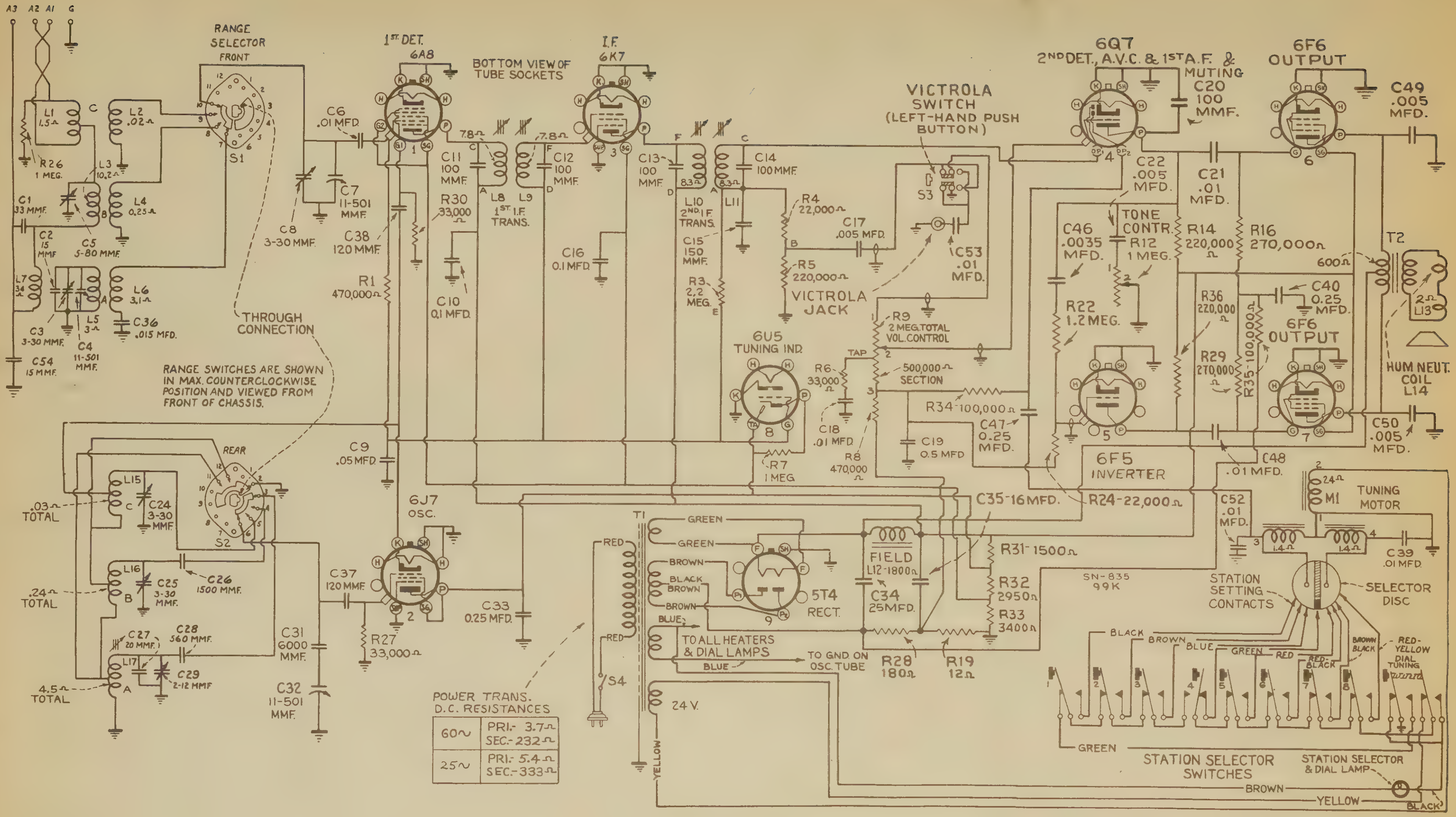


Figure 5—Schematic Circuit Diagram

Precautionary Lead Dress.—(1) The lead from the left pilot light should be kept behind the bulb and toward the Magic Eye, to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to phono. switch should be kept away from the switch terminals and jack.

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal horizontal position.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

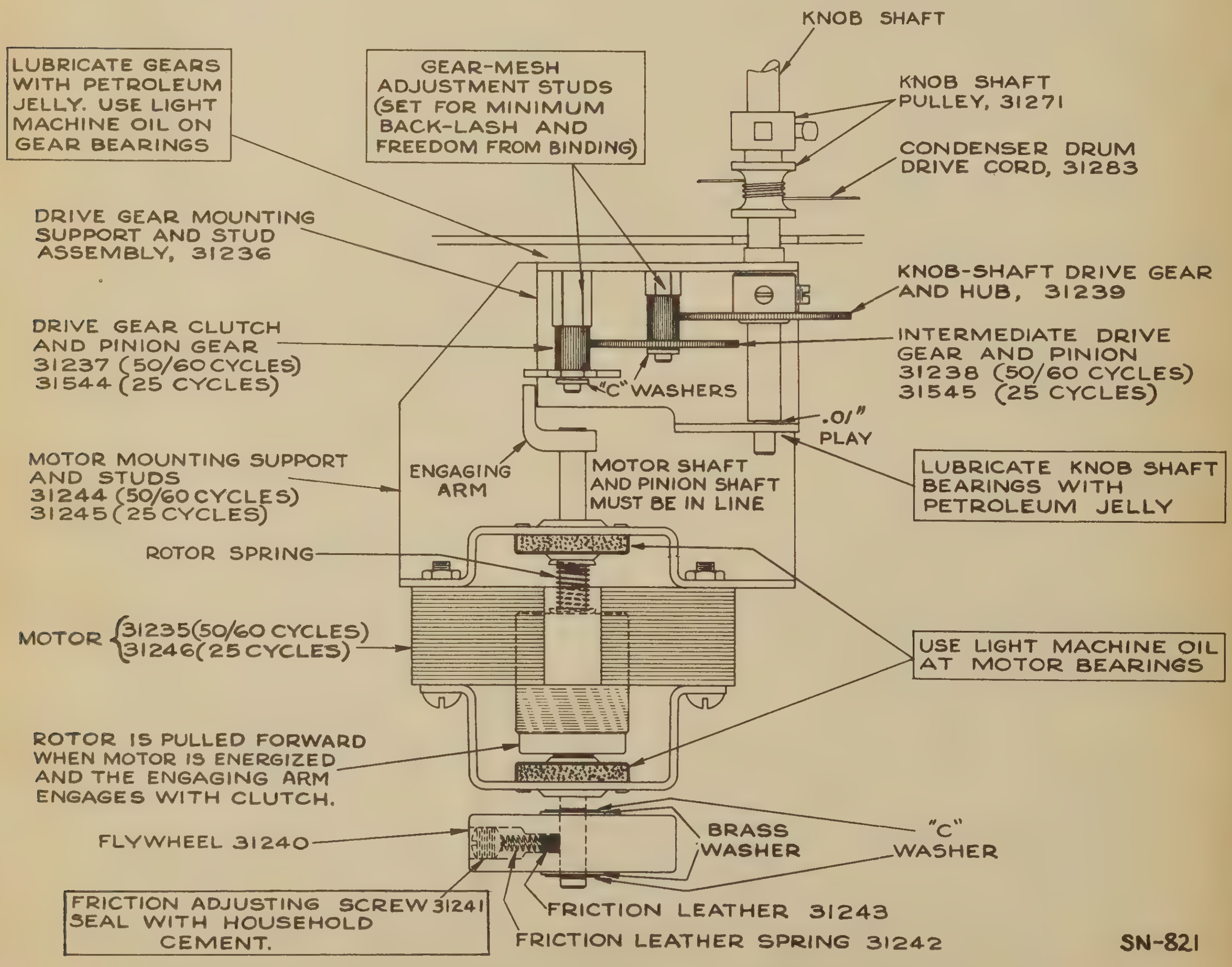

KNOB SHAFT
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING)
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
.01" PLAY
MOTOR MOUNTING SUPPORT AND STUDS 31244 (50/60 CYCLES) 31245 (25 CYCLES)
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING
MOTOR 31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
FRICTION LEATHER 31243
FRICTION LEATHER SPRING 31242
SN-821

Figure 6—Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

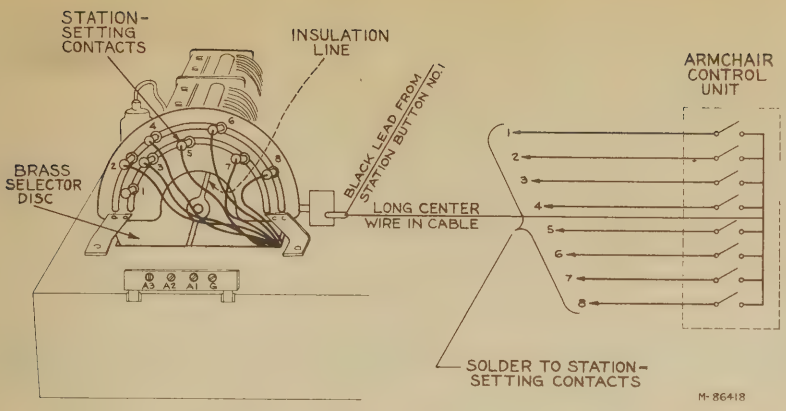


Figure 7—Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver as shown in figure 7 it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. In some cases one of the other seven station buttons on the set may be used in place of No. 1 button for the operation of the Armchair Control.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Model G8A Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged simultaneously causing the motor to be inoperative and overheated.

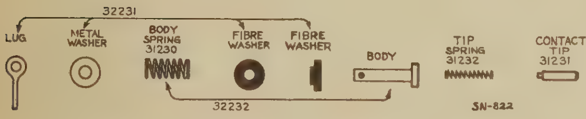
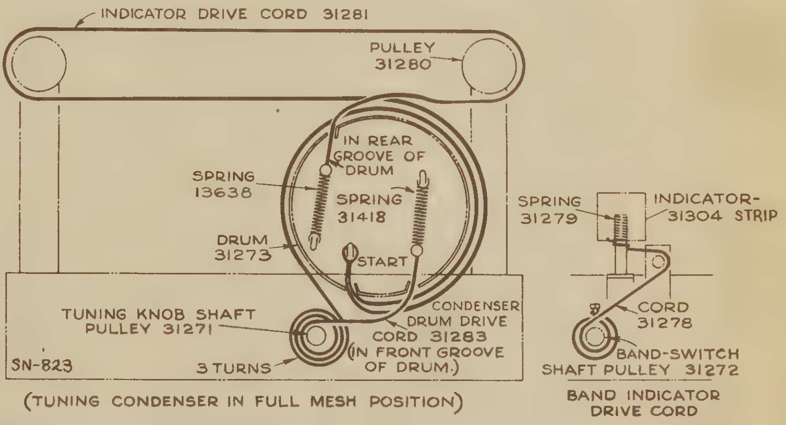


Figure 8—(Above) Component Parts of Station-Setting Contact

Figure 9—(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch


INDICATOR DRIVE CORD 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
SN-823
3 TURNS
(TUNING CONDENSER IN FULL MESH POSITION)
SPRING 31279
INDICATOR-31304 STRIP
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES		12724	Capacitor—120 mmfd. (C37, C38)...........	
31253	Board—Antenna and ground terminal board...		12725	Capacitor—150 mmfd. (C15)...............	
			31433	Capacitor—560 mmfd. (C28)...............	
			31033	Capacitor—1,500 mmfd. (C26)..............	
12714	Capacitor—Adjustable trimmer 2-12 mmfd. (C29)		31405	Capacitor—6,000 mmfd. (C31)..............	
31292	Capacitor—Dual adjustable trimmer 3-30 mmfd. each section (C24, C25)................		30303	Capacitor—.0035 mfd. (C46)...............	
			4838	Capacitor—.005 mfd. (C17, C22, C49, C50)..	
31252	Capacitor—Adjustable trimmer 5-80 mmfd. (C5)		14393	Capacitor—.01 mfd. (C6, C18, C21, C39, C48, C52, C53).........................	
12896	Capacitor—15 mmfd. (C2, C54)............		11315	Capacitor—.015 mfd. (C36)................	
12948	Capacitor—33 mmfd. (C1).................		30882	Capacitor—.05 mfd. (C9)..................	
31432	Capacitor—20 mmfd. (C27)................		4839	Capacitor—0.1 mfd. (C10, C16)............	
12720	Capacitor—100 mmfd. (C20)...............		30965	Capacitor—0.25 mfd. (C33, C40, C47)......	
31270	Capacitor—100 mmfd. (C11, C12, C13, C14)..		30867	Capacitor—0.5 mfd. (C19).................	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
5212	Capacitor—16 mfd. (C35)	
14531	Capacitor—25 mfd. (C34)	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft (50/60 cycle models only)	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft (25 cycle models only)	
31293	Coil—"A" band antenna coil (L5, L6, L7)	
31296	Coil—"A" band oscillator coil (L17)	
31294	Coil—"B" band antenna coil (L3, L4)	
31295	Coil—"B" and "C" band oscillator coil (L15, L16)	
31297	Coil—"C" band antenna coil (L1, L2)	
31290	Condenser—3-gang variable condenser (C3, C4, C7, C8, C32)	
31231	Contact—Contact tip for station-setting contact	
31269	Core—Adjustable core and stud for i-f transformers	
31260	Core—Adjustable core and stud for "A" band oscillator coil	
31273	Drum—Indicator drive cord drum	
31240	Flywheel—Variable condenser drive motor flywheel	
31239	Gear—Variable condenser knob shaft drive gear and hub	
31238	Gear—Variable condenser intermediate drive gear and pinion gear (50/60 cycle models only)	
31545	Gear—Variable condenser intermediate drive gear and pinion gear (25 cycle models only)	
11891	Lamp—Dial lamp	
31480	Lamp—Electric tuning adjustment indicator lamp	
31243	Leather—Friction leather for flywheel	
31246	Motor—Variable condenser drive motor (M1)—25 cycle models only	
31235	Motor—Variable condenser drive motor (M1)—50/60 cycle models only	
31228	Plate—Station-setting contact plate—less contacts	
31227	Plate—Station-setting contact mounting plate—mounts on rear of variable condenser	
5040	Plug—4-contact female plug for speaker cable	
31271	Pulley—Motor pulley	
31272	Pulley—Range switch pulley	
31250	Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 180 ohm sections (R19, R28, R31, R32, R33)	
14284	Resistor—22,000 ohms, 1/10 watt (R24)	
13998	Resistor—22,000 ohms, ¼ watt (R4)	
11300	Resistor—33,000 ohms, 1/10 watt (R27, R30)	
12454	Resistor—33,000 ohms, ¼ watt (R6)	
11281	Resistor—100,000 ohms, 1/10 watt (R34)	
14560	Resistor—100,000 ohms, ¼ watt (R35)	
11398	Resistor—220,000 ohms, 1/10 watt (R14, R36)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
11453	Resistor—270,000 ohms, 1/10 watt (R16, R29)	
11452	Resistor—470,000 ohms, 1/10 watt (R1)	
12285	Resistor—470,000 ohms, ¼ watt (R8)	
12013	Resistor—1 meg., 1/10 watt (R7, R26)	
31056	Resistor—1.2 meg., 1/10 watt (R22)	
5131	Resistor—2.2 meg., 1/10 watt (R3)	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft	
31241	Screw—¼ x 20 headless cone point set screw for flywheel	
4119	Screw—No. 8-32 headless set screw for gear Stock No. 31239	
14350	Screw—No. 8-32 square head set screw for selector rotor disc	
4669	Screw—No. 8-32 square head set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273	
31364	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket	
31251	Socket—Radiotron socket	
31365	Socket—Tuning indicator lamp insulated socket	
31232	Spring—Contact tip spring for station-setting contact	
12007	Spring—Retaining spring for core Stock No. 31269	
31262	Spring—Tension spring for core Stock No. 31260	
31230	Spring—Station-setting contact body spring	
31242	Spring—Tension spring for flywheel	
31236	Support—Variable condenser drive gear mounting support and studs assembly	
31244	Support—Variable condenser motor mounting support and studs for 50/60 cycle models only	
31245	Support—Variable condenser motor mounting support and studs—for 25 cycle models	
31291	Switch—Range switch (S1, S2)	
31248	Tone Control—H.f. tone control and power switch (R12, S4)	
31267	Transformer—First i-f transformer (L8, L9, C11, C12)	
31268	Transformer—Second i-f transformer (L10, L11, C13, C14)	
31308	Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)	
31226	Transformer—Power transformer 110 volts, 25-60 cycle (T1)	
31225	Transformer—Power transformer 110 volts, 50-60 cycle (T1)	
31450	Volume Control (R9)	

STOCK No.	DESCRIPTION	
	SPEAKER ASSEMBLIES (Speaker RL-63-H6) Model 99T	
14356	Board—3-contact reproducer terminal board	
13866	Cap—Cone center dust cap	
11234	Coil—Field coil (L12)	
11469	Coil—Hum neutralizing coil (L14)	
31310	Cone—Speaker cone and voice coil (L13)	
5039	Plug—4-contact male plug for speaker	
31309	Speaker—Complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	SPEAKER ASSEMBLIES (Speaker RL-70-H2) Model 99K	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L12)	
11469	Coil—Neutralizing coil (L14)	
31275	Cone—Speaker cone and voice coil (L13)	
5039	Plug—4-contact male plug for speaker	
31530	Speaker—Complete	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	
	SPEAKER ASSEMBLIES (Speaker RL-70-E2) Model 99K	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L12)	
11469	Coil—Neutralizing coil (L14)	
12667	Cone—Speaker cone and voice coil (L13)	
5039	Plug—4-contact male plug for speaker	
14535	Speaker—Complete	
14358	Screw—Screws, washers, and lockwashers to hold core in yoke	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31303	Bracket—Band indicator mounting bracket complete less indicator strip, cord, and tension spring—Model 99K	
31276	Bracket—Band indicator mounting bracket complete less indicator strip, cord, and tension spring—Model 99T	
31282	Bracket—Magic Eye mounting bracket and holder	
31358	Button—Station selector push button	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip	
31278	Cord—Band indicator drive cord	
31281	Cord—Indicator pointer drive cord	
31283	Cord—Variable condenser drum drive cord	
31456	Cover—8 protective covers for push button markers	
31359	Cushion—Station selector push button rubber cushion	
31451	Dial—Station selector dial scale and crystal	
31356	Escutcheon—Station selector dial escutcheon—less dial scale and push buttons—Model 99K	
31361	Escutcheon—Station selector dial escutcheon—less dial scale and push buttons—Model 99T	
31304	Indicator—Band indicator strip	
31305	Indicator—Station selector indicator pointer	
31355	Knob—Range switch, volume control, tone control, or station selector knob	
31346	Lock—Push button switch lock plate—comprising 10 contact locks in one strip	
31589	Markers—Station call letter markers for push buttons	
31457	Marker—"Record Player" marker for push button	
31458	Marker—"Dial Tuning" marker for push button	
31280	Pulley—Indicator pointer drive cord pulley	
14887	Retainer—Indicator pointer drive cord pulley retainer	
11210	Screw—Chassis mounting screws, washers, and lockwashers for one chassis	
3993	Screw—No. 6-32 square head set screw for pointer slide stop	
31287	Shaft—Indicator pointer slide shaft	
31347	Socket—Pickup socket and bracket	
31279	Spring—Band indicator tension spring	
13638	Spring—Indicator pointer drive cord tension spring	
31418	Spring—Variable condenser drum drive-cord tension spring	
14270	Spring—Retaining spring for knob Stock No. 31355	
31970	Spring—Tension spring for push button switch latch bar	
31307	Stop—Indicator pointer slide stop	
31360	Switch—Pickup switch for mounting on push button switch assembly (S3)	

RCA Victor

MODELS 910KG, U-126 and U-128

Ten-Tube, Three-Band, Electric Tuning, A-C, Radio and Victrolas

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 23—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,000 kc
"Short Wave" (C)	7,000-22,000 kc

R-F ALIGNMENT FREQUENCIES

Band "C"	20,000 kc (osc., ant.)
Band "B"	6,100 kc (osc.)
Band "A"	600 kc (osc.), 1,500 kc (osc., ant.)

INTERMEDIATE FREQUENCY .... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-6A8	First Det.	
(2) RCA-6J7	Oscillator	
(3) RCA-6K7	I-F. Amp.	
(4) RCA-6H6	2nd Det. and A.V.C.	
(5) RCA-6F5	First Audio	
(6) RCA-6F5	Phase Inverter	
(7) RCA-6F6	Power Output	
(8) RCA-6F6	Power Output	
(9) RCA-6U5	"Magic Eye"	
(10) RCA-5T4	Rectifier	

POWER SUPPLY RATING—MODELS U-126, U-128

	Radio Only	Total
A	105-125 volts, 50-60 cycles, 120 watts	145 watts
A-6	105-125 volts, 60 cycles, 120 watts	145 watts
B-2	105-125 volts, 25 cycles, 120 watts	145 watts
C	105-130/140-160/200-250 volts, 50-60 cycles, 120 watts	145 watts
C-6	105-130/140-160/200-250 volts, 60 cycles, 120 watts	145 watts

POWER SUPPLY RATING—MODEL 910KG

A	105-125 volts, 50-60 cycles, 125 watts
B	105-125 volts, 25 cycles, 125 watts
C	105-130/140-160/200-250 volts, 50-60 cycles, 125 watts

POWER OUTPUT

Undistorted	10 watts
Maximum	12 watts

LOUDSPEAKER

Type	12-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

PHONOGRAPH

	MODEL U-126	MODEL U-128
Type	Manual	Automatic—Manual
Record Capacity	one 10-inch or one 12-inch	Seven ten or twelve inch
Turntable Speed	78 R.P.M. (Adjustable)	78 R.P.M. (Adjustable)
Type Pickup	Crystal	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles	80,000 ohms at 1,000 cycles

Mechanical Specifications

	U-126	U-128	910KG
Height (inches)	34	34	36
Width (inches)	$31\frac{13}{16}$	$31\frac{13}{16}$	34
Depth (inches)	16	16	$13\frac{7}{16}$
Tuning Drive Ratio (all)	18 to 1		
Weight (Net lbs.)	93	97	75
Weight (Shipping lbs.)	117	120	95
Chassis Base (inches)	15⅝ x 8½ x 3⅛		
Maximum chassis height (all) (inches)	8¼		

Operating Controls—Radio panel..... (1) Tone Control—Power Switch, (2) Volume control, (3) Tuning control, (4) Range selector—Left to Right, "A," "B," "C," (5) Ten Push Buttons: Left to Right "Phono-Radio" switch, Eight Station Buttons, Dial Tuning Button.

Phono Board:
- U-126—Motor switch—Automatic "off."
- U-128 (1) Motor switch, (2) Automatic 10-12-in. or reject.

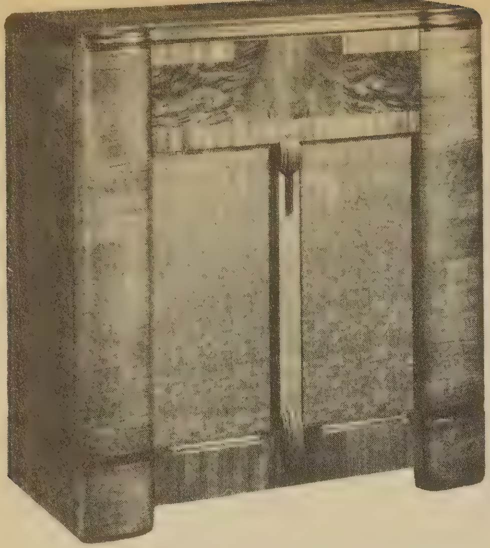
General Description

The RCA Victor Model 910KG Receiver employs a ten-tube, three-band, "Magic Brain" superheterodyne circuit, the arrangement of which is shown in the schematic circuit diagram. Features of design include: "Electric Tuning" for eight broadcast stations; a link-coupled antenna circuit; magnetite-core i-f transformers and "A"-band oscillator coil; full automatic volume control; Victrola jack and switch; "Magic Eye" tuning tube; improved 12-inch dust-proof electrodynamic loudspeaker; aurally compensated audio volume control; continuously variable high-frequency tone control; provision for armchair control attachment; illuminated band indicator; noise-reducing antenna adjustment on "A" band; temperature-stabilized capacitors; phase inverter audio amplifier; and push-pull power output stage.

The Model U-126 combination instrument consists of a radio receiver similar to the Model 910KG, and in addition, a phonograph turntable with a self-starting electric motor, and crystal pickup. The phonograph will play ten- or twelve-inch records; and automatically shuts "off" at the end of record play. The output of the pickup is "shorted" out when the pickup is on the pickup rest.

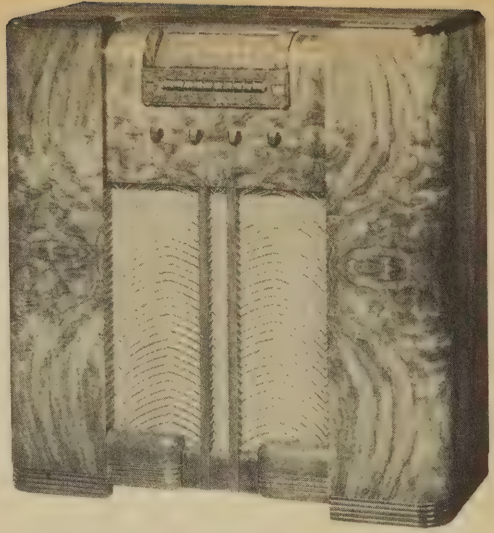
The Model U-128 combination instrument consists of a radio receiver similar to the Model 910KG, with an automatic phonograph mechanism. The phonograph has a self-starting motor, crystal pickup, and may be set to play ten-inch and twelve-inch records singly, or automatically. In the automatic position, seven twelve-inch; eight ten-inch; or a mixed group of seven, ten- and twelve-inch records, may be played in succession. The output of the pickup is "shorted" out when the pickup is on the pickup rest.

First Edition Trademark "Magic Eye," "Magic Brain," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.



Model U-126 Manual Victrola

Model U-128 Automatic Victrola



Model 910KG

Service Data

Victrola Attachment.—A jack located near the "Magic Eye" tube is provided for connecting a Victrola Attachment into the audio-amplifying circuit on Model 910KG. The cable running from the Victrola attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

Precautionary Lead Dress.—(1) The lead from the left pilot light should be kept behind the bulb and toward the "Magic Eye," to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to Victrola switch should be kept away from the switch terminals and jack.

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C5 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

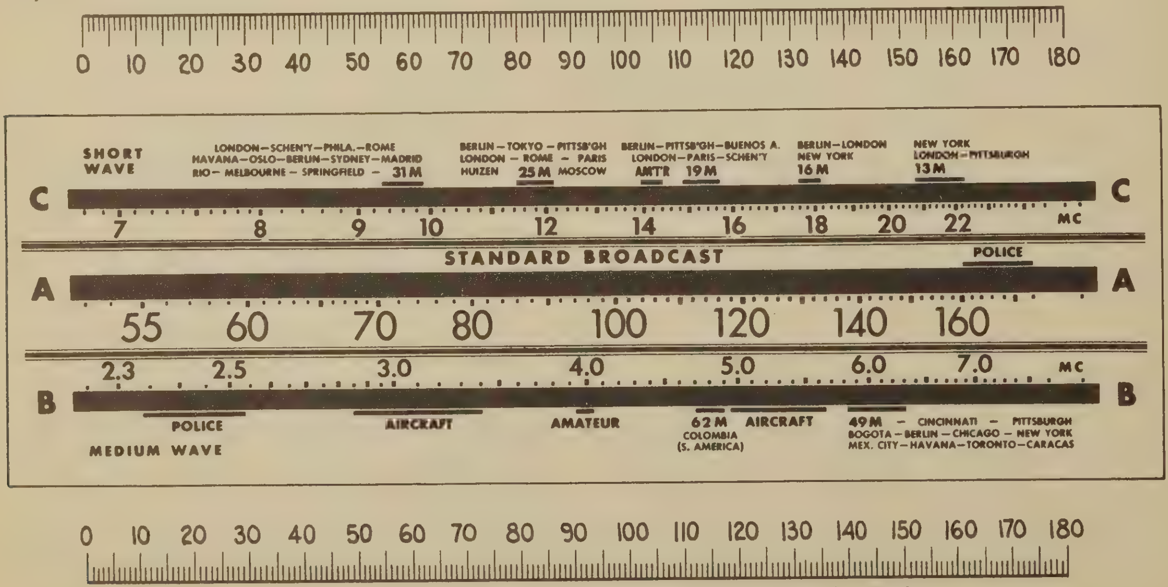


Figure 1—Tuning Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151.5° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

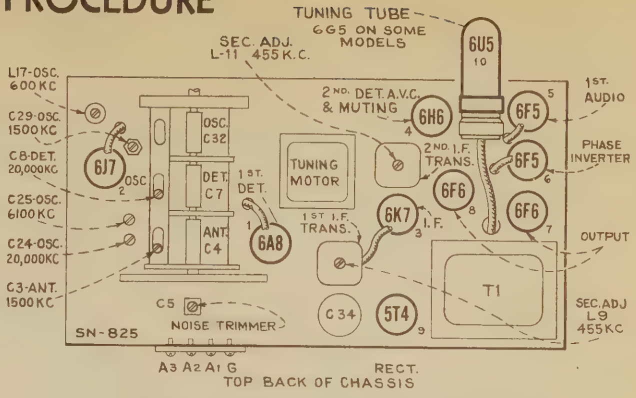


Figure 2—Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-oscillator to —	Tune test-oscillator to —	Range Selector	Set tuning gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L10, L11 (2nd I-F Transformer)
No. 2	6A8 Det. grid cap in series with .01 mfd.	455 kc	"A"		L8, L9 (1st I-F Transformer)
No. 3	A2. Connect A1 to chassis.	20 mc	"C"	20 mc (147.5°)	C24 (osc.)* C8 (det.)†
No. 4	A2, in series with 100 mmfd. Connect A3 to chassis.	6,100 kc	"B"	6,100 kc (145.5°)	C25 (osc.)**
No. 5	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.) C3 (ant.)
No. 6	A2, in series with 100 mmfd. Connect A3 to chassis.	600 kc	"A"	600 kc (29.5°)	L17 (osc.)
No. 7	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C8.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

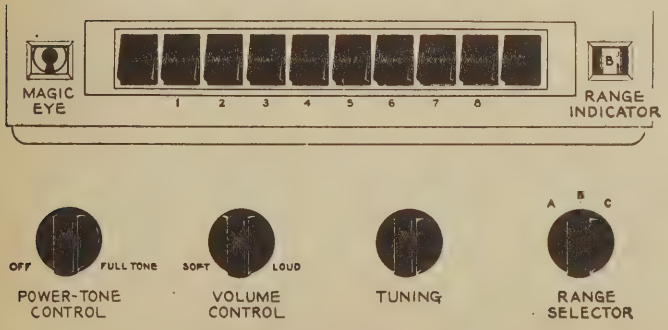
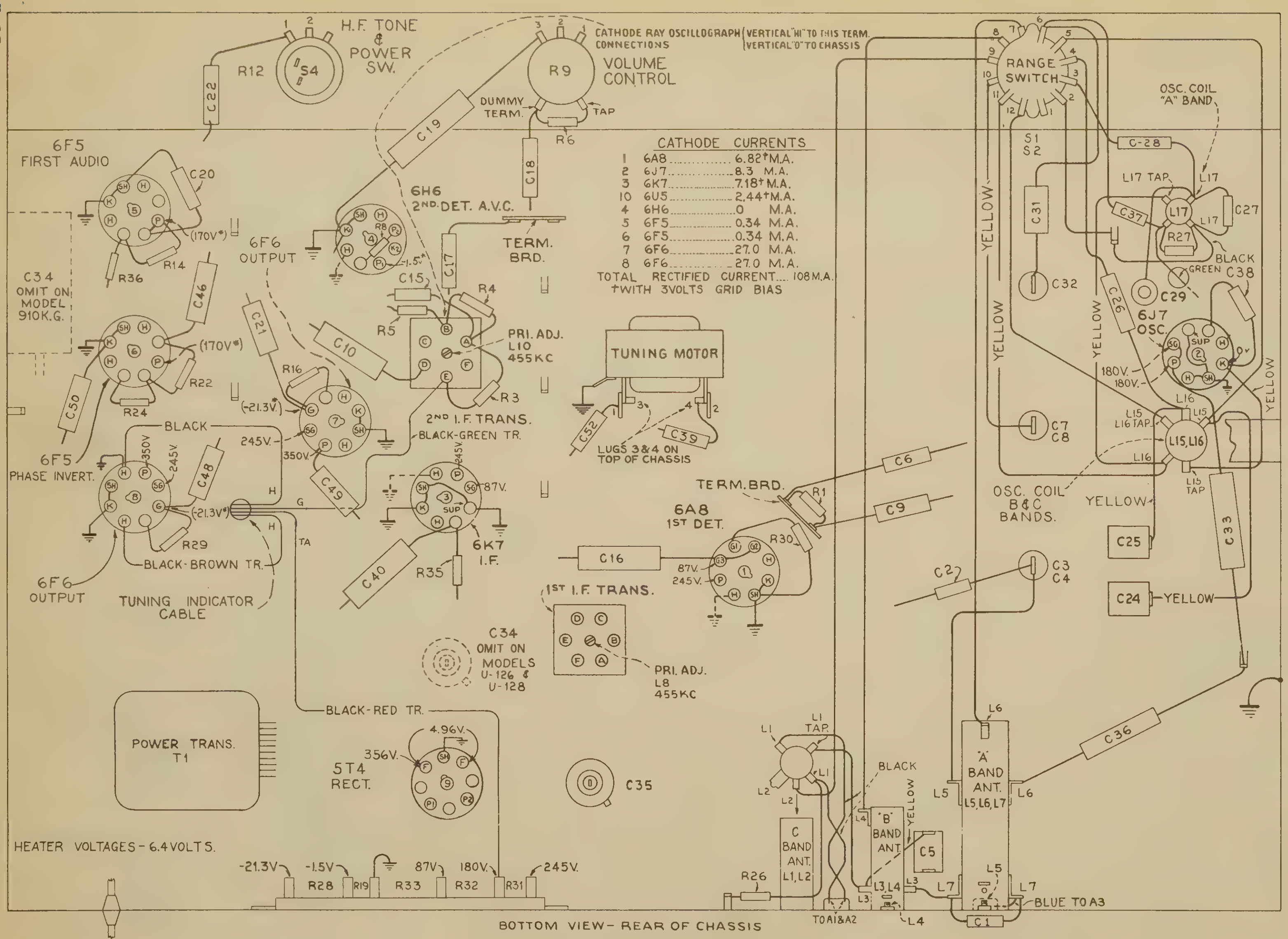


Figure 3—Location of Controls

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.



CATHODE CURRENTS

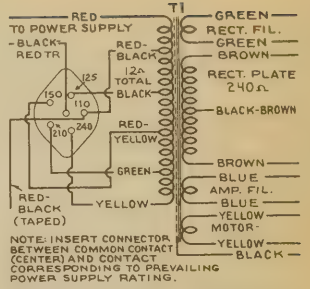
1	6A8	6.82† M.A.
2	6J7	8.3 M.A.
3	6K7	7.18† M.A.
10	6U5	2.44† M.A.
4	6H6	0 M.A.
5	6F5	0.34 M.A.
6	6F5	0.34 M.A.
7	6F6	27.0 M.A.
8	6F6	27.0 M.A.

TOTAL RECTIFIED CURRENT.... 108 M.A.
†WITH 3VOLTS GRID BIAS

Figure 4—R-F Wiring Diagram and Socket Voltages

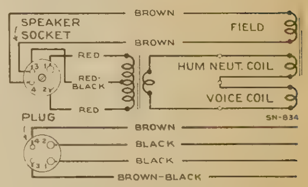
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.



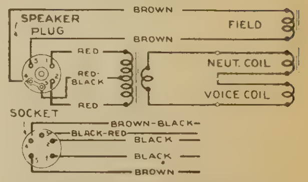
UNIVERSAL TRANS. CONNECTIONS

Above—Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)



SPEAKER PLUG CONNECTIONS

Above—Connections and Colors of Loudspeaker and Cable. Model 910KG.



SPEAKER PLUG CONNECTIONS

Above—Connections and Colors of Loudspeaker and Cable. Models U-126, U-128.

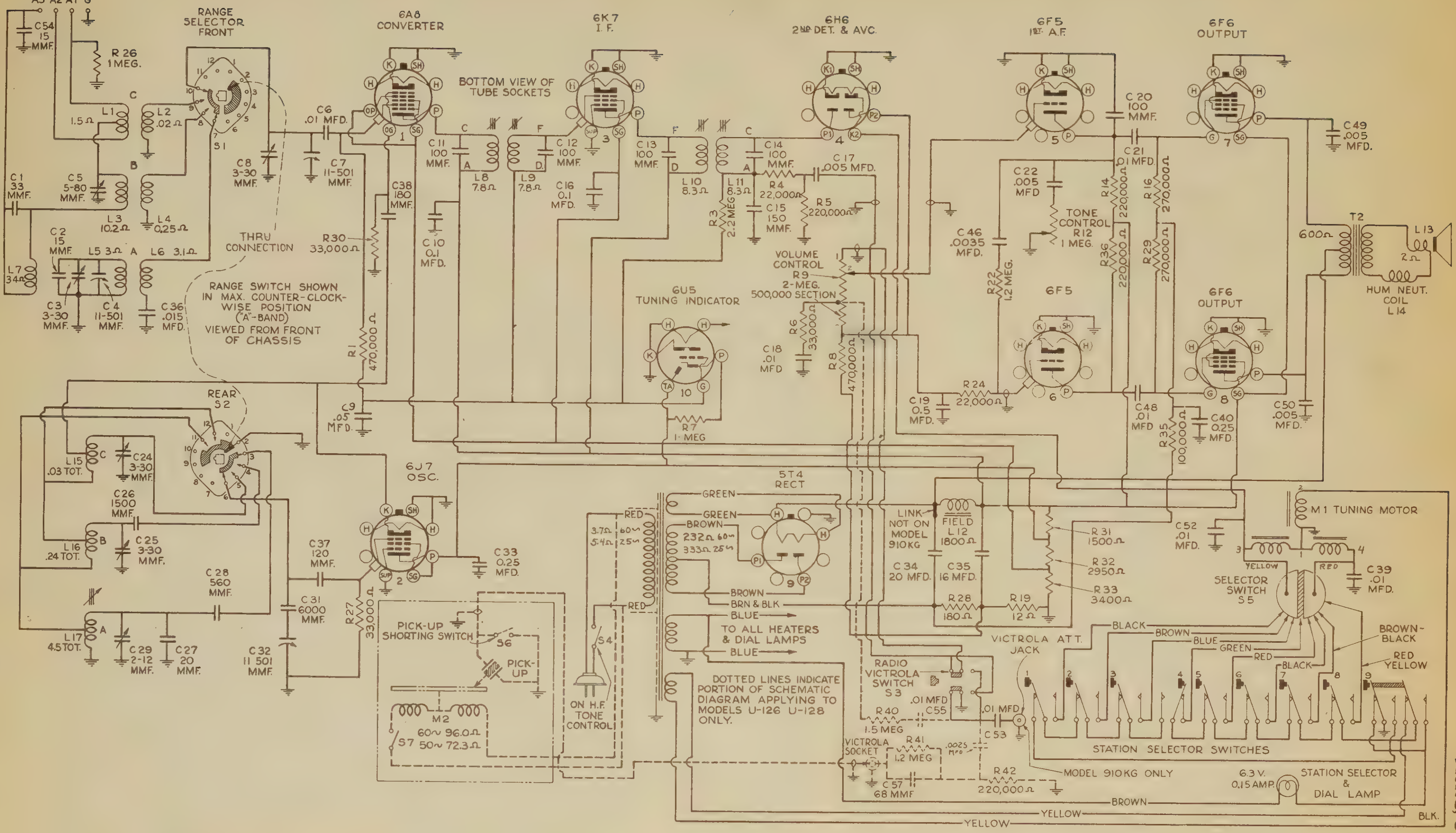


Figure 5—Schematic Circuit Diagram

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal horizontal position.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

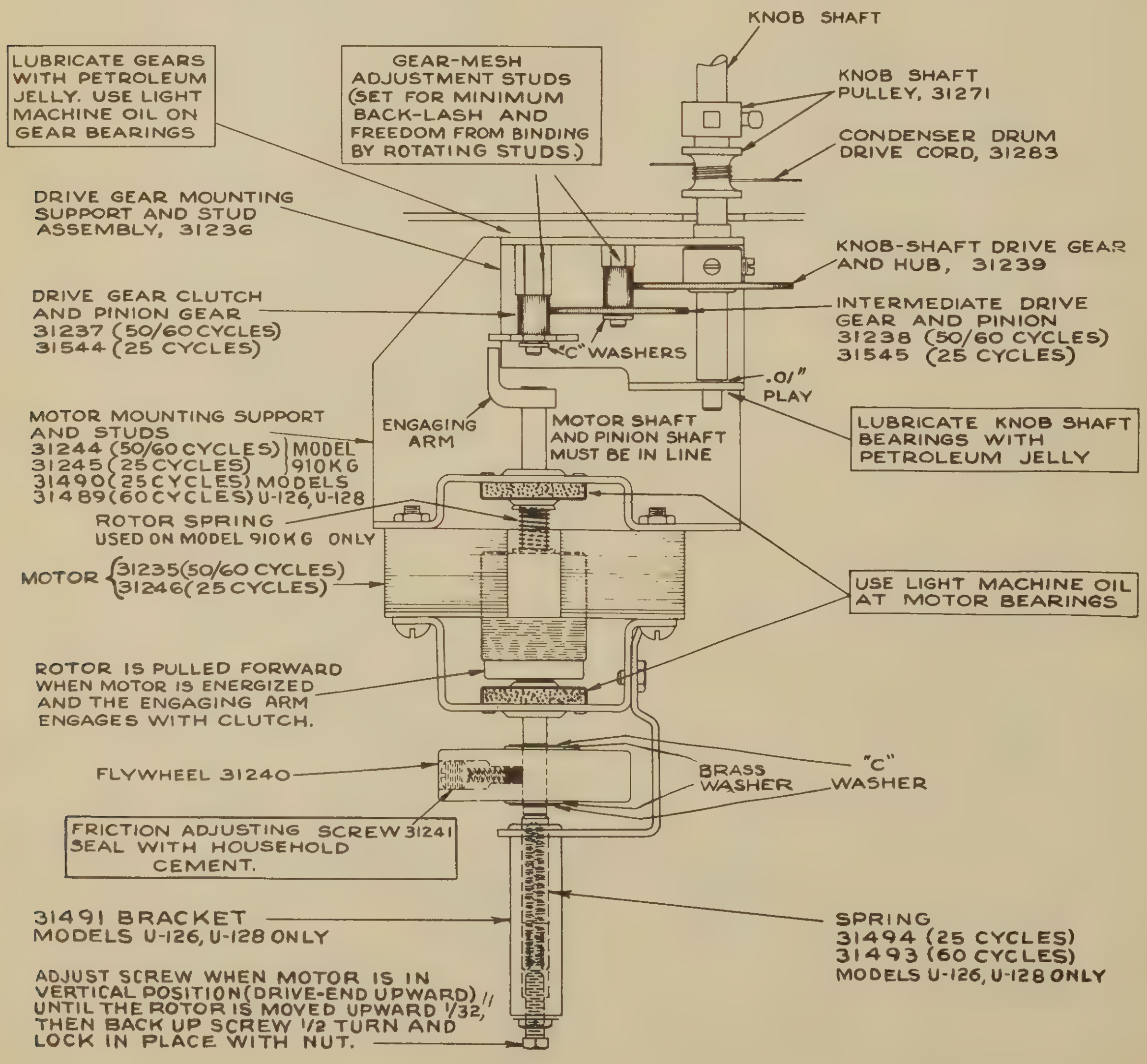

KNOB SHAFT
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
.01" PLAY
MOTOR MOUNTING SUPPORT AND STUDS 31244 (50/60 CYCLES) 31245 (25 CYCLES) MODEL 910KG 31490 (25 CYCLES) 31489 (60 CYCLES) MODELS U-126, U-128
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING USED ON MODEL 910KG ONLY
MOTOR {31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
31491 BRACKET MODELS U-126, U-128 ONLY
SPRING 31494 (25 CYCLES) 31493 (60 CYCLES) MODELS U-126, U-128 ONLY
ADJUST SCREW WHEN MOTOR IS IN VERTICAL POSITION (DRIVE-END UPWARD) UNTIL THE ROTOR IS MOVED UPWARD 1/32," THEN BACK UP SCREW 1/2 TURN AND LOCK IN PLACE WITH NUT.

Figure 6—Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

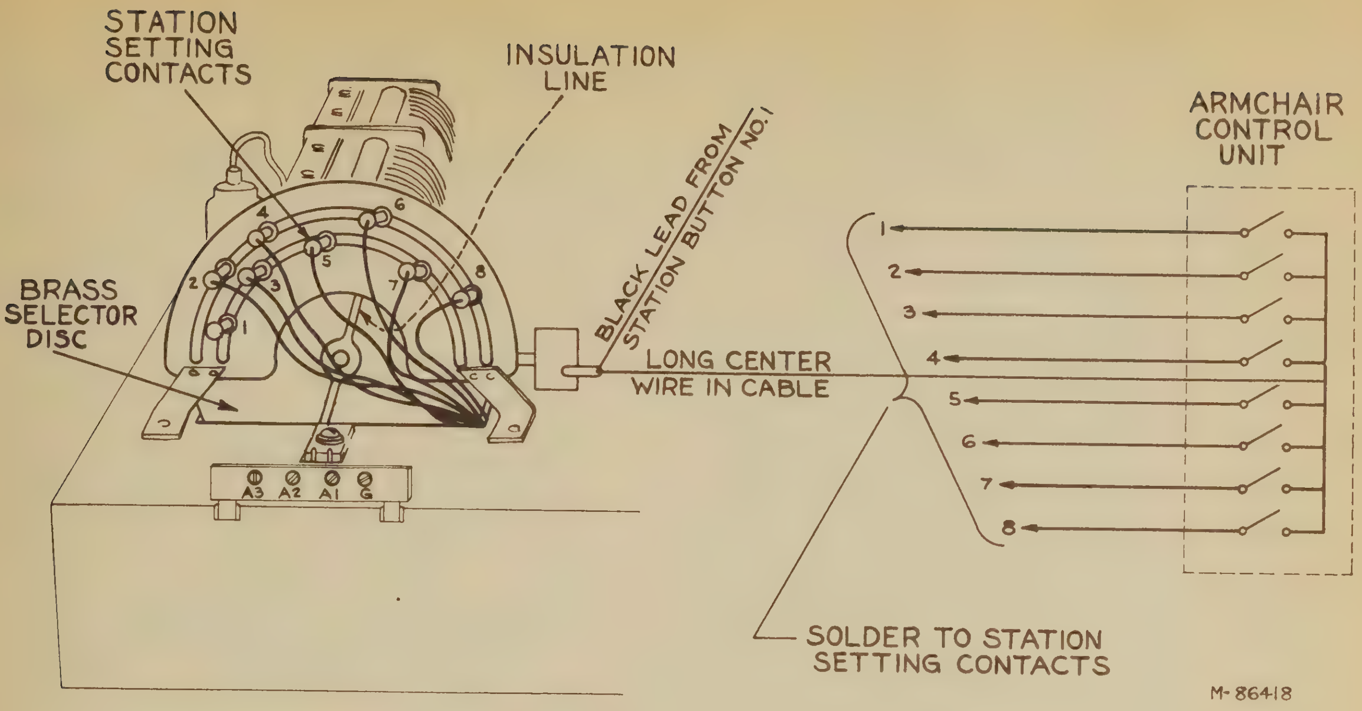


Figure 7—Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Colors of Leads from Push Buttons to Station-Setting Contacts

Station Button	Color of Lead To Station-Setting Contact	Station Button	Color of Lead To Station-Setting Contact
No. 1	Black	No. 5	Red
No. 2	Brown	No. 6	Red-black
No. 3	Blue	No. 7	Brown-black
No. 4	Green	No. 8	Red-yellow

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication

Motor bearings and **gear bearings;** use light machine oil. **Gear faces;** use "Pure Oil No. 611" or petroleum jelly. **Dial-indicator pulleys** and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver as shown in figure 7 it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. In some cases one of the other seven station buttons on the set may be used in place of No. 1 button for the operation of the Armchair Control.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Model G8A Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.

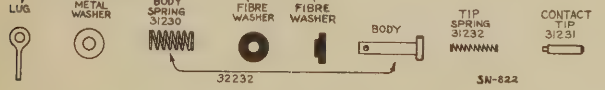


Figure 8—(Above) Component Parts of Station-Setting Contact

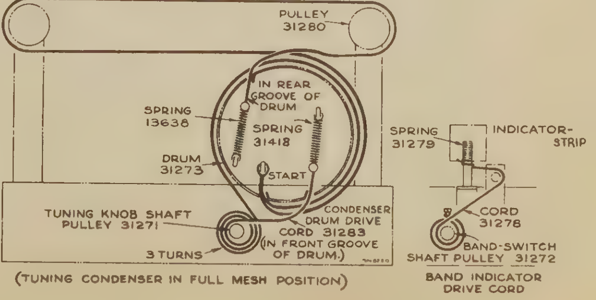

INDICATOR DRIVE CORD 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
3 TURNS
(TUNING CONDENSER IN FULL MESH POSITION)
SPRING 31279
INDICATOR-STRIP
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD
SN-823

Figure 9—(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch

Turntable Mechanism Model U-126

The crystal unit of the pickup is sealed in a metal case against extremes of climate. The offset mounting of the crystal unit in the pickup arm insures ideal tracking between needle and record grooves. If failure should occur due to a defective crystal, no attempt should be made to repair the crystal, but a new replacement crystal unit should be installed.

The turntable drive is a self-starting, variable-speed, governor-type, induction motor. The motor speed adjusting screw is located under the turntable, and may be adjusted by inserting a screwdriver thru one of the holes in the turntable, after the hole has been lined up with the screw. The flexible motor drive arrangement is similar to the U-128. The motor speed should be 78 r.p.m., and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding beyond the edge of the record, and then counting the number of revolutions of the turntable per minute. The motor is designed to be simple and foolproof in operation. Occasionally, however, certain adjustments and lubrication may be required. These are illustrated and explained in figure 12. In addition, an application of oil to the felt pad, which rubs against the governor disc, will insure smooth operation.

The turntable is started by pushing to the rear the motor starting lever, which appears to the right of the turntable. The adjustment on the automatic motor stopping switch should be made so that the switch will snap to the "off" position when the needle in the pickup head is 1¾ inches away from the center of the turntable. The locking screw and details of the switch mechanism are shown in figure 14. The locking screw and nut may be reached, from underneath the motor board, or, by an open end wrench, under the turntable.

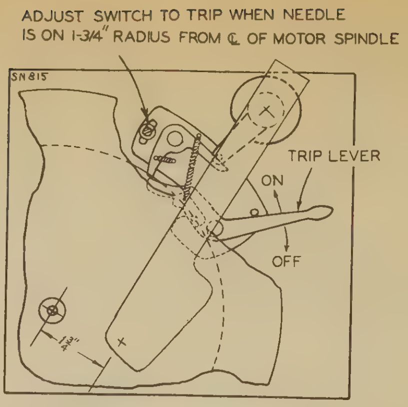

ADJUST SWITCH TO TRIP WHEN NEEDLE IS ON 1-3/4" RADIUS FROM ℄ OF MOTOR SPINDLE
SN815
TRIP LEVER
ON
OFF
1¾"

Figure 14—Adjustment of Automatic Stop Switch

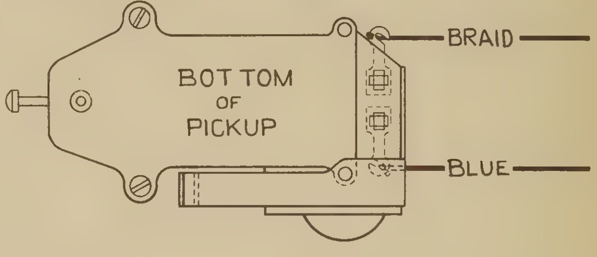


Figure 15—Pickup Connections

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31492	Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly (Models U-126 and U-128)...............	
31253	Board—Antenna and ground terminal board (Model 910KG)........................	
31531	Board—Antenna and ground terminal board (Models U-126 and U-128)...............	
31276	Bracket—Band indicator mounting bracket complete—less indicator strip, cord, and tension spring	
31491	Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment (Models U-126 and U-128).....................	
31282	Bracket—Magic Eye mounting bracket and holder	
12714	Capacitor—Adjustable trimmer 2-12 mmfd. (C29)	
31292	Capacitor—Dual adjustable trimmer 3-30 mmfd. each section (C24, C25).................	
31252	Capacitor—Adjustable trimmer 5-80 mmfd. (C5)	
12896	Capacitor—15 mmfd. (C2, C54)............	
12948	Capacitor—33 mmfd. (C1)..................	
31432	Capacitor—20 mmfd. (C27).................	
13057	Capacitor—68 mmfd. (C57) (Models U-126 and U-128)	
12720	Capacitor—100 mmfd. (C20)...............	
31270	Capacitor—100 mmfd. (C11, C12, C13, C14).	
12724	Capacitor—120 mmfd. (C37, C38)...........	
12725	Capacitor—150 mmfd. (C15)...............	
31433	Capacitor—560 mmfd. (C28)...............	
31033	Capacitor—1,500 mmfd. (C26)..............	
31405	Capacitor—6,000 mmfd. (C31)..............	
5107	Capacitor—.0025 mfd. (C53) (Models U-126, U-128)	
30303	Capacitor—.0035 mfd. (C46)...............	
4838	Capacitor—.005 mfd. (C17, C22, C49, C50)..	
4858	Capacitor—.01 mfd. (C21, C48) (Models U-126 and U-128).........................	
14393	Capacitor—.01 mfd. (C6, C18, C21, C39, C48, C52, C53, C55) (C21, C48, C53, in Model 910KG only) (C55 in Models U-126 and U-128 only)........................	
11315	Capacitor—.015 mfd. (C36)................	
30882	Capacitor—.05 mfd. (C9)..................	
4839	Capacitor—0.1 mfd. (C10, C16)............	
12484	Capacitor—0.25 mfd. (C33)................	
30965	Capacitor—0.25 mfd. (C40)................	
30867	Capacitor—0.5 mfd. (C19).................	
5212	Capacitor—16 mfd. (C35) (Model 910KG)...	
31496	Capacitor—16 mfd. (C35) (Models U-126 and U-128)	
31495	Capacitor—20 mfd. (C34) (Models U-126 and U-128)	
14531	Capacitor—25 mfd. (C34) (Model 910KG)....	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—50-60 cycle models only.....................	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only......................	
31293	Coil—"A" band antenna coil (L5, L6, L7)...	
31296	Coil—"A" band oscillator coil (L17)........	
31294	Coil—"B" band antenna coil (L3, L4).......	
31295	Coil—"B" and "C" band oscillator coil (L15, L16)	
31297	Coil—"C" band antenna coil (L1, L2).......	
31290	Condenser—3-gang variable condenser (C3, C4, C7, C8, C32).......................	
31231	Contact—Contact tip for station-setting contact.	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip...	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip...	
31278	Cord—Band indicator drive cord............	
31281	Cord—Indicator pointer drive cord..........	
31283	Cord—Variable condenser drum drive cord....	
31269	Core—Adjustable core and stud for i-f transformers	
31260	Core—Adjustable core and stud for "A" band oscillator coil........................	
31273	Drum—Indicator drive cord drum...........	
31240	Flywheel—Variable condenser drive motor flywheel	
31239	Gear—Variable condenser knob shaft drive gear and hub...........................	
31545	Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only......	
31238	Gear—Variable condenser intermediate drive gear and pinion gear—50-60 cycle models only...	
31304	Indicator—Band indicator strip (Model 910KG)	
31532	Indicator—Band indicator strip (Models U-126 and U-128)...........................	
11891	Lamp—Dial, pilot, or compartment lamp, 6.3 V, 0.25 amp..........................	
31480	Lamp—Electric tuning adjustment indicator lamp, 6.3 V, 0.15 amp......................	
31243	Leather—Friction leather for flywheel........	
31346	Lock—Push button switch lock plate—comprising 10 contact locks in one strip...........	
31246	Motor—Variable condenser drive motor (M1) —25 cycle models only...................	
31235	Motor—Variable condenser drive motor (M1) —50-60 cycle models only................	
31228	Plate—Selector contact plate—less contacts....	
31227	Plate—Selector mounting plate—mounts on rear of variable condenser.....................	
30868	Plug—2-contact female plug for phono. motor cable (Models U-126 and U-128)..........	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
5040	Plug—4-contact female plug for speaker cable (Model 910KG)	
12493	Plug—5-contact female plug for speaker cable (Models U-126 and U-128)	
31280	Pulley—Indicator pointer drive cord pulley	
31271	Pulley—Motor pulley	
31272	Pulley—Range switch pulley	
31250	Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 180 ohm sections (R19, R28, R31, R32, R33)	
14284	Resistor—22,000 ohms, 1/10 watt (R24)	
13998	Resistor—22,000 ohms, ¼ watt (R4)	
11300	Resistor—33,000 ohms, 1/10 watt (R27, R30)	
12454	Resistor—33,000 ohms, ¼ watt (R6)	
14560	Resistor—100,000 ohms, ½ watt (R35)	
12264	Resistor—220,000 ohms, ¼ watt (R5, R36, R42) (R42 Models U-126 and U-128 only)	
11398	Resistor—220,000 ohms, 1/10 watt (R14)	
11453	Resistor—270,000 ohms, 1/10 watt (R16, R29)	
11452	Resistor—470,000 ohms, 1/10 watt (R1)	
12285	Resistor—470,000 ohms, ¼ watt (R8)	
12013	Resisor—1 meg., 1/10 watt (R7, R26)	
30208	Resistor—1.2 meg., ¼ watt (R22, R41) (R41 Models U-126 and U-128 only)	
11981	Resistor—1.5 meg., 1/10 watt (R40) (Models U-126 and U-128 only)	
5131	Resistor—2.2 meg., 1/10 watt (R3)	
14887	Retainer—Indicator pointer drive cord pulley retainer	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft	
31241	Screw—¼ x 20 headless, cone point set screw for flywheel	
4119	Screw—No. 8-32 headless set screw for gear Stock No. 31239	
14350	Screw—No. 8-32 square head set screw for selector rotor disc	
4669	Screw—No. 8-32 square head set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273	
31364	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket	
31347	Socket—Pickup socket and bracket	
31251	Socket—Tube socket	
31365	Socket—Tuning indicator lamp insulated socket	
31279	Spring—Band indicator tension spring	
31232	Spring—Contact tip spring for station-setting contact	
13638	Spring—Indicator pointer drive cord tension spring	
31418	Spring—Variable condenser drive cord tension spring	
12007	Spring—Retaining spring for core Stock No. 31269	
31230	Spring—Station-setting contact body spring	
31262	Spring—Tension spring for core Stock No. 31260	
31242	Spring—Tension spring for flywheel	
31970	Spring—Tension spring for push button switch latch bar	
31494	Spring—Variable condenser motor rotor adjustment bearing spring for 25 cycle models only (Models U-126 and U-128 only)	
31493	Spring—Variable condenser motor rotor adjustment bearing spring for 50-60 cycle models only (Models U-126 and U-128 only)	
31236	Support—Variable condenser drive gear mounting support and studs assembly	
31245	Support—Variable condenser motor mounting support and studs for 25 cycle models only (Model 910KG only)	
31490	Support—Variable condenser motor mounting support and studs for 25 cycle models only (Models U-126 and U-128 only)	
31244	Support—Variable condenser motor mounting support and studs for 50-60 cycle models only (Model 910KG only)	
31489	Support—Variable condenser motor mounting support and studs for 50-60 cycle models only (Models U-126 and U-128 only)	
31360	Switch—Pickup switch for mounting on push button switch assembly (S3)	
31291	Switch—Range switch (S1, S2)	
31248	Tone Control — H.f. tone control and power switch (R12, S4)	
31267	Transformer—First i-f transformer (L8, L9, C11, C12)	
31268	Transformer—Second i-f transformer (L10, L11, C13, C14)	
31308	Transformer—Power transformer 105/130-140/160-200/250 volts, 50-60 cycle (T1)	
31226	Transformer—Power transformer 110 volts, 25-60 cycle (T1)	
31225	Transformer—Power transformer 110 volts, 50-60 cycle (T1)	
31450	Volume Control (R9) (Model 910KG only)	
31249	Volume Control (R9) (Models U-126 and U-128 only)	

STOCK No.	DESCRIPTION	
	MOTORBOARD ASSEMBLIES Model U-126	
31536	Coupling—Flexible motor coupling complete	
9848	Cup—Used needle cup and lid complete	
31465	Mounting—Pickup arm base rubber mounting	
31535	Pin—Drive pin to fasten flexible coupling to turntable shaft	
30870	Plug—2-contact male plug for automatic switch leads	
14195	Screw—Set screw for flexible coupling	
30100	Springs—1 set of springs for automatic switch	
31155	Spring—Used needle cup cover tension spring	
31147	Strip—Complete set of rubber strips for flexible couplings	
31534	Switch—Automatic switch and lever complete	
31467	Switch—Switch only for automatic switch (S7)	
31533	Turntable—Turntable with spindle shaft and nose complete	
31537	Washers—Turntable bearing and shim washers.	
	MOTORBOARD ASSEMBLIES Model U-128	
31149	Base—Tone arm mounting base	
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	
14209	Bumper—Main lever rubber bumper (1)	
9848	Cup—Used needle cup, rest, and lid complete	
31148	Escutcheon—Index escutcheon	
31151	Guide—Pickup lift cable guide (coil spring, 80T 2-in. large) (2)	
31150	Mounting—Pickup arm base rubber mounting complete	
31155	Spring—Needle cup lid tension spring	
	OPERATING MECHANISM Model U-128	
31134	Bracket—Pickup locating lever mounting bracket (3)	
31144	Cam—Cam and gear assembly (4)	
6808	Clutch—Trip lever friction clutch assembly (5)	
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	
31129	Cover—Cap for top of record post	
31116	Finger—Trip lever friction finger assembly (7)	
31119	Gear—Long arm and rack gear for front left-hand record post (8)	
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	
31121	Gear—Record post gear (10)	
31123	Guide—Main lever spring guide (11)	
31114	Lever—Index lever assembly (12)	
31137	Lever—Index lever tension spring lever (13)	
31138	Lever—Locating lever and pawl assembly (14)	
31113	Lever—Main lever assembly (15)	
31140	Lever—Pickup lift cable lever and spring assembly (16)	
31135	Lever—Pickup locating lever assembly (17)	
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	
31132	Lever—Trip detaining lever (19)	
31115	Lever—Trip lever assembly (20)	
31131	Lever—Trip regulator lever (21)	
31133	Pawl—Trip pawl assembly (22)	
31124	Pin—Record post drive pin (23)	
14207	Roller—Pickup lift cable roller and bracket assembly (24)	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	
31136	Spring— index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅜-in. O.D., ¾-in. lg.)	
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set of rubber strips for flexible coupling	
31139	Turntable Assembly—less spindle	
31128	Washer—"C" washer for top of record post	
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
	MOTOR ASSEMBLIES Models U-126, U-128	
31448	Motor—105-125 volts, 25 cycle (M2)	
31163	Motor—105-125 volts, 50-60 cycle (M2)	
31157	Motor—105-125 volts, 60 cycle (M2)	
30868	Plug—2-contact female plug for motor leads (Model U-126 only)	
30870	Plug—2-contact male plug for motor power cable	
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	
14206	Switch—Motor toggle switch (S7) (Model U-128 only)	
	PICKUP AND ARM ASSEMBLIES Model U-126	
31469	Base—Pickup arm base and pivot shaft	
31156	Crystal—Pickup crystal cartridge and needle screw	
31468	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	
	PICKUP AND ARM ASSEMBLIES Model U-128	
31162	Cable—Pickup arm lift cable and clips	
31156	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	
	SPEAKER ASSEMBLIES	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L12)	
11469	Coil—Neutralizing coil (L14)	
31275	Cone—Speaker cone and voice coil (L13)	
5039	Plug—4-contact male plug for speaker (Model 910KG only)	
31539	Plug—5-contact male plug for speaker (Models U-126 and U-128 only)	
31530	Speaker complete (RL70H-2) (Model 910KG only)	
31538	Speaker complete (RL70H-4) (Models U-126 and U-128 only)	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	
	MISCELLANEOUS ASSEMBLIES	
31358	Button—Station selector push buttons	
13103	Cap—Pilot lamp cap (Bulls Eye) (Models U-126 and U-128 only)	
31456	Cover—8-protective covers for push button markers	
31540	Cushion—Chassis mounting cushion and screw assemblies—sufficient for one chassis (Models U-126 and U-128 only)	
31541	Cushion—Motor plate mounting cushion and clamp assembly—sufficient for one instrument (Models U-126 and U-128 only)	
31451	Dial—Station selector dial scale and crystal	
31356	Escutcheon—Tuning dial escutcheon—less dial and buttons (Model 910KG only)	
31361	Escutcheon—Tuning dial escutcheon—less dial and buttons (Models U-126 and U-128 only)	
30698	Hinge—Cabinet lid hinge (Models U-126 and U-128 only)	
31305	Indicator — Station selector indicator pointer (Model 910KG only)	
31542	Indicator — Station selector indicator pointer (Models U-126 and U-128 only)	
31355	Knob—Station selector, volume control, tone control, or range switch knob	
31458	Marker—"Dial Tuning" push button marker	
31457	Marker—"Record Player" push button marker	
31589	Marker—Station call letter push button markers	
31760	Screen — Compartment lamp screen (Models U-126 and U-128 only)	
11210	Screw—Chassis mounting screws and washers—(4 required) (Model 910KG only)	
14270	Spring—Retaining spring for knob Stock No. 31355	
31470	Suspension—Motor board suspension springs, screw, and lockwasher (4 required) (Models U-126 and U-128 only)	
11831	Support—Cabinet lid support (Models U-126 and U-128 only)	
	ANTENNA ASSEMBLIES	
31426	Counterpoise Line—Additional length 60 ft. long	
12426	Insulator—Strain and counterpoise insulator	
9816	Transmission Line—Additional length 60 ft. long	

RCA Victor

MODEL 911K

Eleven-Tube, Five-Band, Electric-Tuning, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 19—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"49 Meter Band"	5,920-6,230 kc
"31 Meter Band"	9,480-9,690 kc
"25 Meter Band"	11,680-11,940 kc
"19 Meter Band"	15,080-15,390 kc

R-F Alignment Frequencies

"Standard Broadcast" (A)	1,500 kc (osc., det., ant.), 600 kc (osc.)
"49 Meter Band"	6,100 kc (osc.)
"31 Meter Band"	9,600 kc (osc., det., ant.)
"25 Meter Band"	11,800 kc (osc.)
"19 Meter Band"	15,200 kc (osc.)

Intermediate Frequency .... 455 kc

Rca Tube Complement

(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6A8	First Detector
(3)	RCA-6J7	Heterodyne Oscillator
(4)	RCA-6K7	I-F Amplifier
(5)	RCA-6H6	Second Det., A.V.C., and Muting
(6)	RCA-6F5	Audio Voltage Amplifier
(7)	RCA-6F5	A-F Amp. and Audio Phase Inverter
(8)	RCA-6F6	Power Output
(9)	RCA-6F6	Power Output
(10)	RCA-6U5	"Magic Eye" Tuning Tube
(11)	RCA-5T4	Full-Wave Rectifier

Pilot Lamps .... One Mazda 47, 6-8 volts, .15 amp; Two Mazda 44, 6.3 volts, .25 amp.

Power Supply Ratings

Rating A	105-125 volts, 50-60 cycles, 120 watts
Rating B	105-125 volts, 25-30 cycles, 120 watts
Rating C	105-125/140-160/195-250 volts, 50-60 cycles, 120 watts

Power Output

Undistorted	10 watts
Maximum	12 watts

Loudspeaker

Type	12-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

Mechanical Specifications

Height	41½ inches
Width	28½ inches
Depth	14½ inches
Weight (net)	73 pounds
Weight (shipping)	92 pounds
Chassis Base Dimensions	15⅝ inches x 8½ inches x 3⅛ inches
Over-all Chassis Height	8¼ inches
Operating Controls	(1) Power Switch-Tone; (2) Volume; (3) Tuning; (4) Range Selector, left to right, "A," "49 Meter," "31 Meter," "25 Meter," "19 Meter;" Ten Push Buttons; left to right, Victrola-Attachment Switch; Eight Station Buttons, Dial-Tuning Button.
Tuning Drive Ratio (manual)	18 to 1

General Description

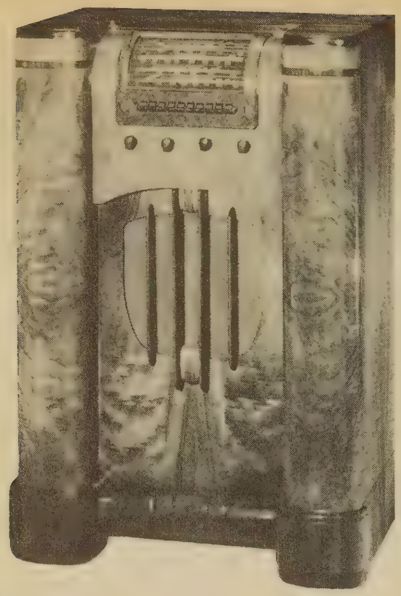
This receiver employs an eleven-tube, "Magic Brain" superheterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Features of design include electric tuning for eight broadcast stations; push-pull power output stage; magnetite-core i-f transformers; magnetite-core "A" band oscillator tracking adjustment; temperature-stabilized capacitors; four spread-bands; automatic volume control; jack and switch for Victrola attachment; "Magic Eye" tuning tube; 12-inch, dust-proof electrodynamic loudspeaker; aural-compensated audio volume control; continuously variable high-frequency tone control; provision for armchair control attachment; new straight-line dial; illuminated band indicator; noise-reducing adjustment on "A" band and noise reduction on "C" band with RCA Victor Master Antenna; air-core trimmer condensers.

First Edition

Trademarks "Magic Eye," "Magic Brain," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U. S. A.

Service Data



Model 911K

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place upon completion of adjustment.

Victrola Attachment.—A jack located near the "Magic Eye" tube is provided for connecting a Victrola Attachment into the audio-amplifying circuit. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C1 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C1 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

Calibration Scale

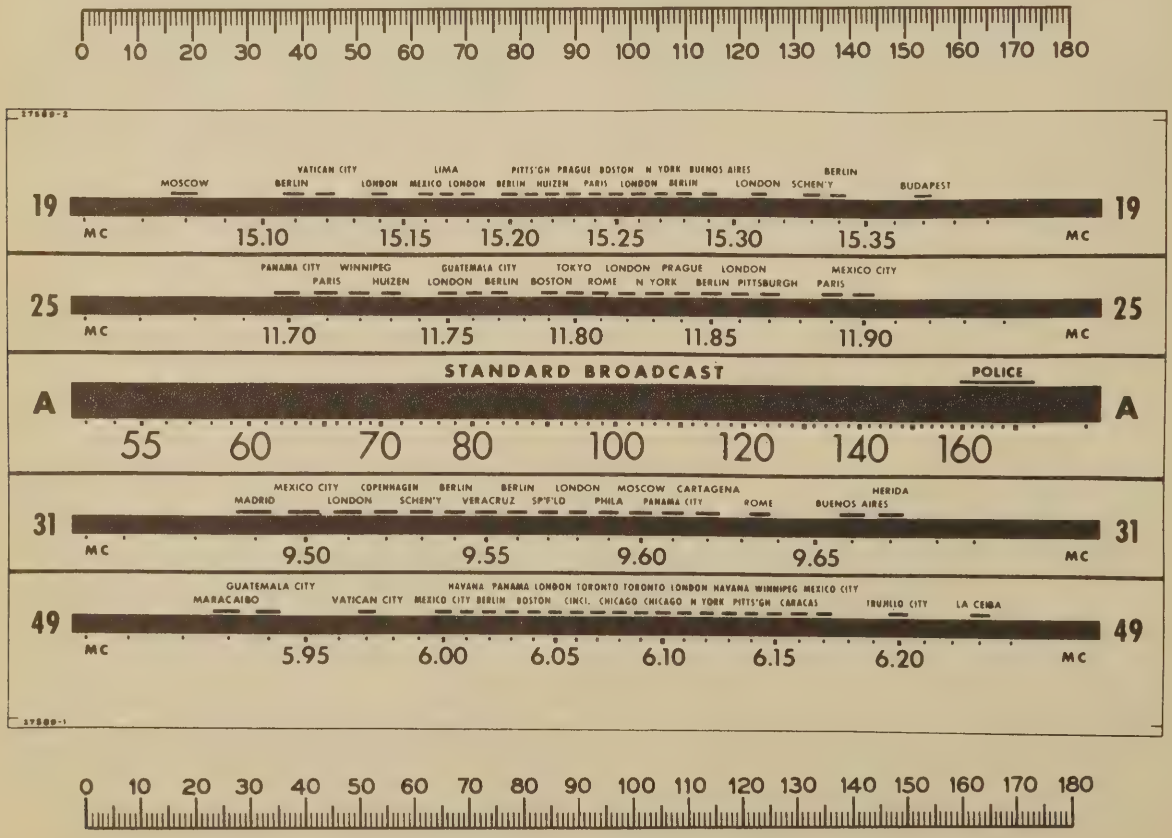


Figure 1—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example 90° on the calibration scale corresponds approximately to 11.8 mc on the 25-meter band, and 940 kc on "A" band, etc. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

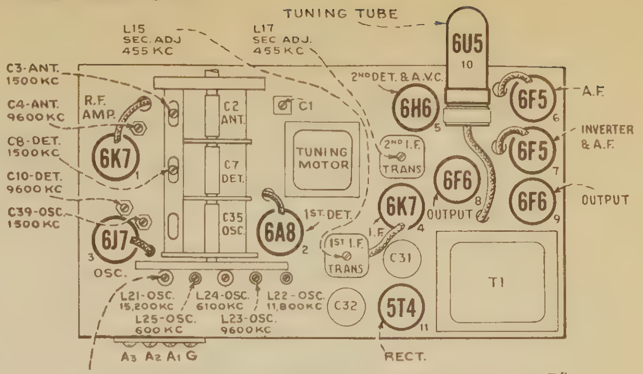
As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.



CAUTION: THIS ADJ. SCREW MUST PROJECT AT LEAST ¾" FROM TOP OF CHASSIS TO PREVENT SHORTING +B.

Figure 2—Tube and Trimmer Locations

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

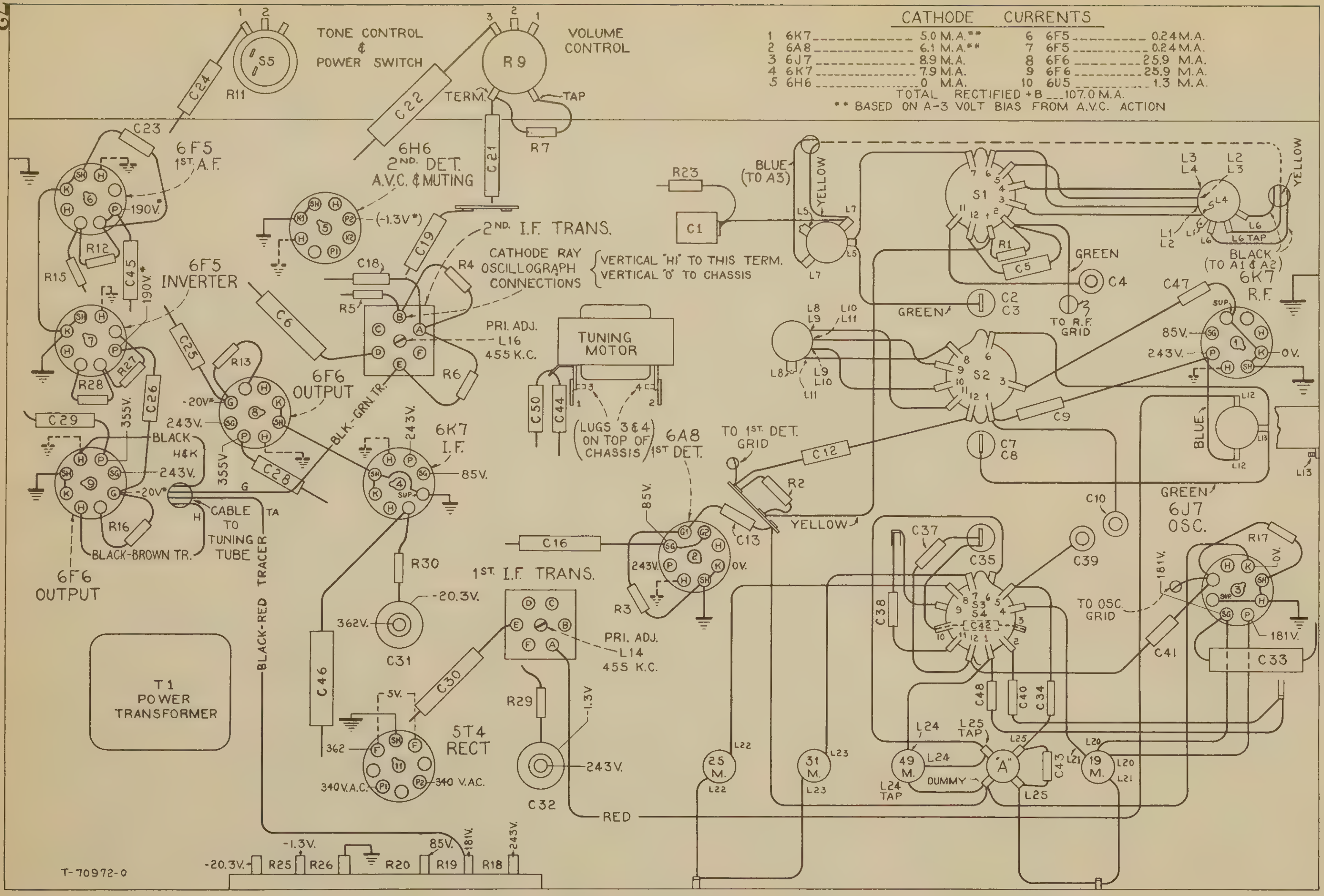
Using RCA Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the magic eye may be used as an output indicator for this unmodulated signal.

Steps	Connect the high side of test-oscillator to—	Tune Test-Oscillator to—	Range Selector	Set Tuning Gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L16, L17 (2nd I-F transformer)
No. 2	6A8 1st-det. grid cap, in series with .01 mfd.	455 kc	"A"		L14, L15 (1st I-F transformer)
No. 3	A2, in series with 100 mmf. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.) C3 (ant.) C8 (det.)
No. 4	A2, in series with 100 mmf. Connect A3 to chassis.	600 kc	"A"	600 kc (30.0°)	L25 (osc.)
No. 5	A2, in series with 100 mmf. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.)
No. 6	A2. Connect A1 to chassis.	6,100 kc	"49M"	6,100 kc (106°)	L24 (osc.)*
No. 7	A2. Connect A1 to chassis.	9,600 kc	"31M"	9,600 kc (102°)	L23 (osc.)** C4 (ant.) C10 (det.)
No. 8	A2. Connect A1 to chassis.	11,800 kc	"25M"	11,800 kc (90.0°)	L22 (osc.)**
No. 9	A2. Connect A1 to chassis.	15,200 kc	"19M"	15,200 kc (78.0°)	L21 (osc.)**

* Use maximum inductance peak (plunger in) if two peaks can obtained.

** Use minimum inductance peak (plunger out) if two peaks can be obtained.

Note that the heterodyne oscillator tracks **above** the signal frequency on all bands except "49M," where it is lower than the signal frequency.



CATHODE	CURRENTS				
1	6K7	5.0 M.A.**	6	6F5	0.24 M.A.
2	6A8	6.1 M.A.**	7	6F5	0.24 M.A.
3	6J7	8.9 M.A.	8	6F6	25.9 M.A.
4	6K7	7.9 M.A.	9	6F6	25.9 M.A.
5	6H6	0 M.A.	10	6U5	1.3 M.A.

TOTAL RECTIFIED +B ...107.0 M.A.

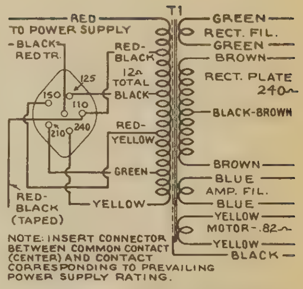
** BASED ON A-3 VOLT BIAS FROM A.V.C. ACTION

BOTTOM VIEW REAR OF CHASSIS

Figure 3—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

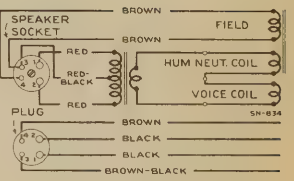
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



NOTE: INSERT CONNECTOR BETWEEN COMMON CONTACT (CENTER) AND CONTACT CORRESPONDING TO PREVAILING POWER SUPPLY RATING.

UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)



SPEAKER PLUG CONNECTIONS

Above — Connections and Colors of Loudspeaker and Cable.

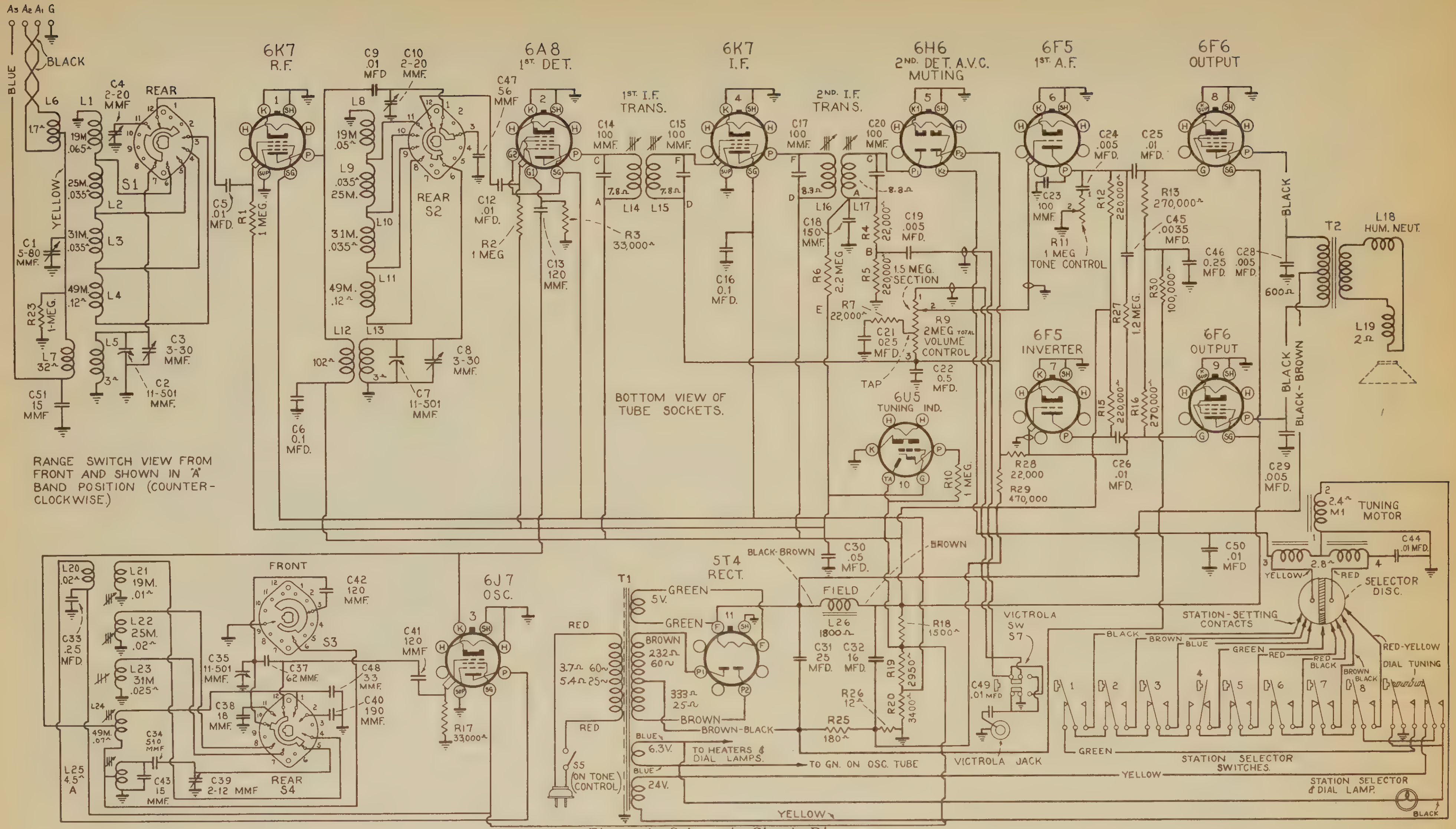


Figure 4—Schematic Circuit Diagram

Precautionary Lead Dress.—

(1) Keep tuning tube cable and the lead from the left pilot light away from the 6F5 grid cap.

(2) Leads on spread-band antenna and r-f coils should be kept short as possible.

(3) Keep black lead from L25 away from C38 and L24.

(4) Keep black lead from L25 to cathode lug on 6J7 away from R17.

(5) The power cord lead and the primary lead of the power transformer which connect to the power switch should be twisted together.

(6) Keep C13 away from the 6A8 control grid lead and from the chassis.

(7) Shielded leads to Victrola jack must be dressed away from switch terminals and jack.

(8) Blue and black leads from antenna board to coils must be twisted.

(9) Black lead and condenser which connect to 6F6 plate should be kept away from inverter grid lead and resistors which connect to it.

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Adjustment of Flywheel Friction

In normal operation, the motor drives the tuning condenser and selector disc until the insulation line just passes the particular station-setting contact: The motor then reverses and moves the disc slowly in the opposite direction until the insulation line is under the contact, and the mechanism stops.

In some cases, particularly with high line-voltage, the disc may make two or three reversals before stopping.

The flywheel friction adjustment screw should be set to give the least number of reversals with the chassis in normal horizontal position.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

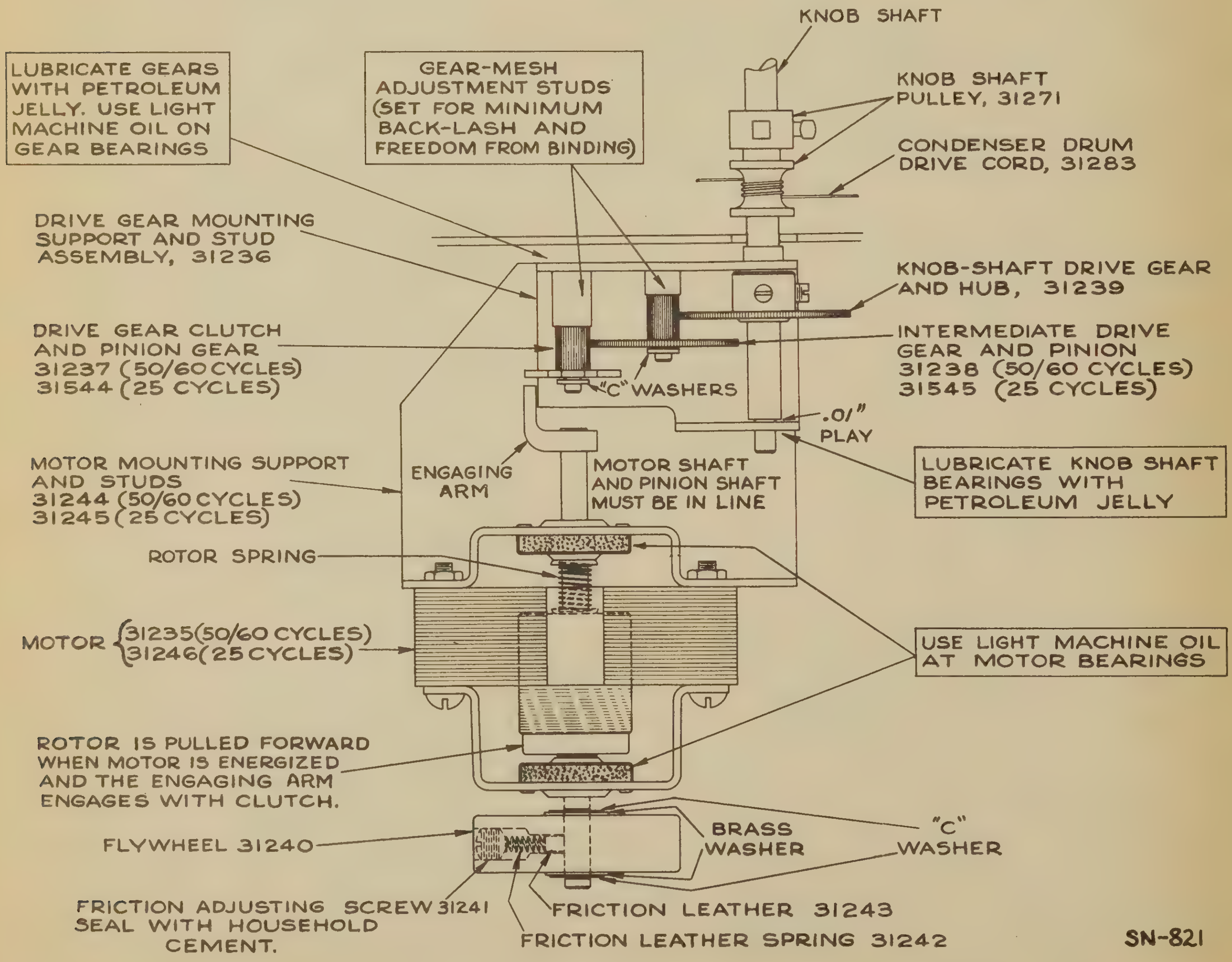

KNOB SHAFT
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING)
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS
.01" PLAY
MOTOR MOUNTING SUPPORT AND STUDS 31244 (50/60 CYCLES) 31245 (25 CYCLES)
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ROTOR SPRING
MOTOR {31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
FRICTION LEATHER 31243
FRICTION LEATHER SPRING 31242
SN-821

Figure 5—Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the I-F and first-audio tubes. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication

Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver as shown in figure 7 it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. In some cases one of the other seven station buttons on the set may be used in place of No. 1 button for the operation of the Armchair Control.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Model G8A Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged simultaneously causing the motor to be inoperative and overheated.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

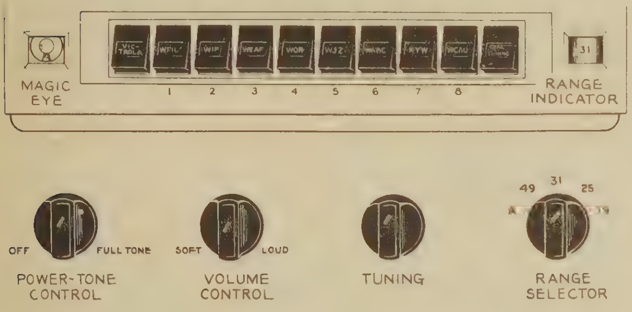


Figure 6—Location of Controls

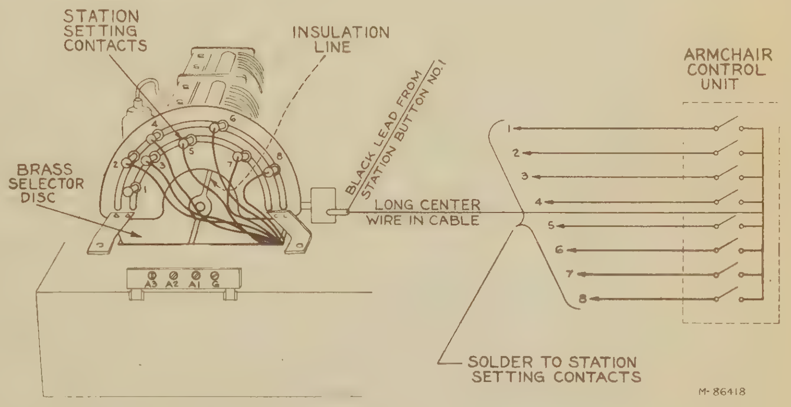
The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

Figure 7—Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow



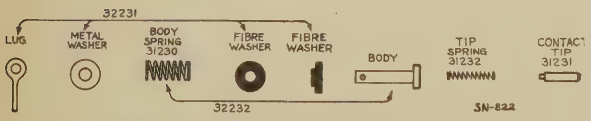
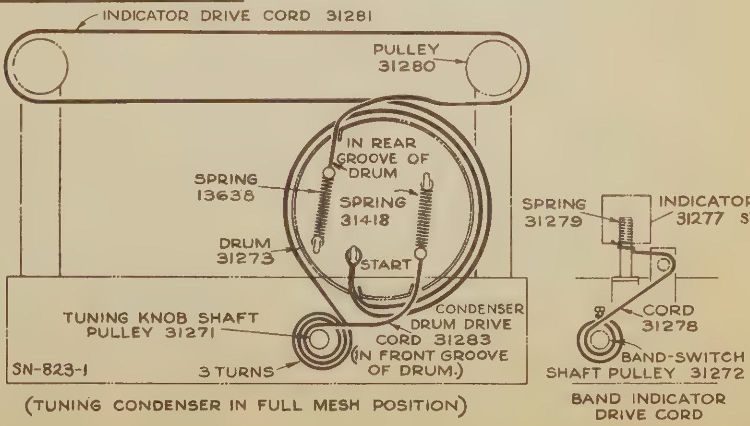


Figure 8—(Above) Component Parts of Station-Setting Contact

Figure 9—(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch


INDICATOR DRIVE CORD 31281
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
START
TUNING KNOB SHAFT PULLEY 31271
CONDENSER DRUM DRIVE CORD 31283 (IN FRONT GROOVE OF DRUM.)
3 TURNS
SN-823-1
(TUNING CONDENSER IN FULL MESH POSITION)
SPRING 31279
INDICATOR-STRIP 31277
CORD 31278
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31253	Board—Antenna and ground terminal board	
12714	Capacitor—Adjustable trimmer, 2-12 mmfd. (C39)	
12884	Capacitor—Adjustable trimmer, 2-20 mmfd. (C4, C10)	
31252	Capacitor—Adjustable trimmer, 5-80 mmfd. (C1)	
31353	Capacitor—15 mmfd. (C43)	
12896	Capacitor—15 mmfd. (C51)	
31350	Capacitor—18 mmfd. (C38)	
31354	Capacitor—33 mmfd. (C48)	
12723	Capacitor—56 mmfd. (C47)	
31349	Capacitor—62 mmfd. (C37)	
12720	Capacitor—100 mmfd. (C23)	
31270	Capacitor—100 mmfd. (C14, C15, C17, C20)	
12724	Capacitor—120 mmfd. (C13, C41)	
31352	Capacitor—120 mmfd. (C42)	
12725	Capacitor—150 mmfd. (C18)	
31351	Capacitor—190 mmfd. (C40)	
31348	Capacitor—510 mmfd. (C34)	
30303	Capacitor—.0035 mfd. (C45)	
4838	Capacitor—.005 mfd. (C19, C24, C28, C29)	
14393	Capacitor—.01 mfd. (C5, C12, C25, C26, C44, C49, C50)	
4858	Capacitor—.01 mfd. (C9)	
4870	Capacitor—.025 mfd. (C21)	
4886	Capacitor—.05 mfd. (C30)	
4839	Capacitor—0.1 mfd. (C6, C16)	
12484	Capacitor—0.25 mfd. (C33, C46)	
30867	Capacitor—0.5 mfd. (C22)	
5212	Capacitor—16 mfd. (C32)	
14531	Capacitor—25 mfd. (C31)	
31544	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only	
31237	Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft, 50/60 cycle models only	
31263	Coil—"A" band antenna coil (L5, L7)	
31257	Coil—"A" band oscillator coil (L25)	
31265	Coil—"A" band detector coil (L12, L13)	
31264	Coil—19, 25, 31, and 49 meter bandspread antenna coil (L1, L2, L3, L4, L6)	
31266	Coil—19, 25, 31, and 49 meter bandspread detector coil (L8, L9, L10, L11)	
31258	Coil—19 meter band oscillator coil (L20, L21)	
31254	Coil—25 meter band oscillator coil (L22)	
31255	Coil—31 meter band oscillator coil (L23)	
31256	Coil—49 meter band oscillator coil (L24)	
31234	Condenser—3-gang variable condenser (C2, C3, C7, C8, C35)	
31231	Contact—Contact tip for station-setting contact	
31260	Core—Adjustable core and stud for "A" band oscillator coil	
31269	Core—Adjustable core and stud for i-f transformer	
31259	Core—Adjustable core and stud for 19, 25, 31 or 49 meter band oscillator coils	
31273	Drum—Indicator drive cord drum	
31240	Flywheel—Variable condenser drive motor flywheel	
31545	Gear—Variable condenser intermediate drive gear and pinion gear, 25 cycle models only	
31238	Gear—Variable condenser intermediate drive gear and pinion gear, 50/60 cycle models only	
31239	Gear—Variable condenser knob shaft drive gear and hub	
11891	Lamp—Dial lamp	
31480	Lamp—Electric tuning adjustment indicator lamp	
31243	Leather—Friction leather for flywheel	
31246	Motor—Variable condenser drive motor (M-1)—25 cycle models only	
31235	Motor—Variable condenser drive motor (M-1)—50/60 cycle models only	
31228	Plate—Selector contact plate—less contacts	
31227	Plate—Selector mounting plate—mounts on rear of variable condenser	
5040	Plug—4-contact female for speaker cable	
31271	Pulley—Motor pulley	
31272	Pulley—Range switch pulley	
31250	Resistor—Voltage divider comprising one 1,500 ohms, one 2,950 ohms, one 3,400 ohms, one 12 ohms, and one 180 ohms sections (R18, R19, R20, R25, R26)	
14284	Resistor—22,000 ohms, 1/10 watt (R4, R7, R28)	
11300	Resistor—33,000 ohms, 1/10 watt (R3, R17)	
11281	Resistor—100,000 ohms, 1/10 watt (R30)	
11398	Resistor—220,000 ohms, 1/10 watt (R12, R15)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
11453	Resistor—270,000 ohms, 1/10 watt (R13, R16)	
11452	Resistor—470,000 ohms, 1/10 watt (R29)	
12013	Resistor—1 meg., 1/10 watt (R2, R10)	
13730	Resistor—1 meg., ¼ watt (R1, R23)	
31056	Resistor—1.2 meg., 1/10 watt (R27)	
5131	Resistor—2.2 meg., 1/10 watt (R6)	
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft	
31241	Screw—¼ x 20 headless, cone point set screw for flywheel	
14350	Screw—No. 8-32 square head set screw for selector rotor disc	
4119	Screw—No. 8-32 headless set screw for gear, Stock No. 31239	
4669	Screw—No. 8-32 square head set screw for pulley, Stock Nos. 31271 and 31272, and drum, Stock No. 31273	
31364	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket	
31251	Socket—Radiotron socket	
31365	Socket—Tuning indicator lamp insulated socket	
31232	Spring—Contact tip spring for station-setting contact	
12007	Spring—Retaining spring for core, Stock No. 31269	
31230	Spring—Station-setting contact body spring	
31261	Spring—Tension spring for core, Stock No. 31259	
31262	Spring—Tension spring for core, Stock No. 31260	
31242	Spring—Tension spring for flywheel	
31245	Support—Variable condenser motor mounting support and studs—for 25 cycle models only	
31244	Support—Variable condenser motor mounting support and studs—for 50-60 cycle models only	
31236	Support—Variable condenser drive gear mounting support and studs assembly	
31247	Switch—Range switch (S1, S2, S3, S4)	
31248	Tone Control—H-f tone control and power switch (R11, S5)	
31267	Transformer—First i-f transformer (L14, L15, C14, C15)	
31268	Transformer—Second i-f transformer (L16, L17, C17, C20)	
31226	Transformer—Power transformer, 110 volts, 25-60 cycle (T1)	
31225	Transformer—Power transformer, 110 volts, 50-60 cycle (T1)	
31249	Volume Control (R9)	
	SPEAKER ASSEMBLIES	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L26)	
11469	Coil—Neutralizing coil (L18)	
31275	Cone—Speaker cone and voice coil (L19)	
5039	Plug—4-contact male plug for speaker	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	
	MISCELLANEOUS ASSEMBLIES	
31276	Bracket—Band indicator mounting bracket complete except less band indicating strip, cord, and tension spring	
31282	Bracket—Magic Eye bracket and holder	
31358	Button—Station selector switch push button	
31344	Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip	
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip	
31278	Cord—Band indicator drive cord	
31281	Cord—Indicator pointer drive cord	
31283	Cord—Variable condenser drum drive cord	
31456	Cover—8 protective covers for push button markers	
31359	Cushion—Station selector push button rubber cushion	
31363	Dial—Station selector dial and crystal	
31362	Escutcheon—Station selector dial escutcheon—less dial scale and push buttons	
31277	Indicator—Band indicator strip	
31284	Indicator—Station selector indicator pointer	
31355	Knob—Range switch, tone control, volume control, or station selector knob	
31346	Lock-Plate—Push button switch lock-plate—comprising 10 contact locks in one strip	
31589	Marker—Station call letter markers for push buttons	
31457	Marker—"Victrola" marker for push button	
31458	Marker—"Dial Tuning" marker for push button	
31280	Pulley—Indicator pointer drive cord pulley	
14887	Retainer—Indicator pointer drive cord pulley retainer	
31285	Screen—Station selector dial color screen and light diffuser	
11210	Screw—Chassis mounting screws, washers, and lockwashers for 1 chassis	
3993	Screw—No. 6-32 square head set screw for pointer slide stop	
31287	Shaft—Indicator pointer slide shaft	
31286	Slide—Indicator pointer carriage and clip	
31347	Socket—Pickup socket and bracket	
13638	Spring—Indicator pointer drive cord tension spring	
31418	Spring—Variable condenser drive cord tension spring	
31279	Spring—Tension spring for band indicator	
31970	Spring—Tension spring for station selector push button switch latch bar	
14270	Spring—Retaining spring for knob, Stock No. 31355	
31288	Stop—Indicator pointer slide stop	
31360	Switch—Pickup switch for mounting on push-button switch assembly (S7)	
31312	Switch—Station selector push-button switch and bracket assembly, complete	
	ANTENNA ASSEMBLIES	
31426	Counterpoise Line—Additional length 60 ft. long	
12426	Insulator—Strain and counterpoise insulator	
9816	Transmission Line—Additional length 60 ft. long	

RCA Victor

MODEL U-104

Chassis No. RC-345H

Five-Tube, Single-Band, AC, Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 43—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Range	540-1,720 kc
Alignment Frequency	1,760 kc (ant., det.)

Tube Complement

(1) RCA-6K7	R-F Amp.
(2) RCA-6J7	Detector
(3) RCA-25L6-G	Output
(4) RCA-25Z6-G	Rectifier
(5) RCA-BK55B	Ballast Tube
Dial Lamp	Mazda No. 40, 6.3 volts, .15 amp.

Power Supply Ratings

A-5	105-125 volts, 50 cycles, 60 watts
A-6	105-125 volts, 60 cycles, 60 watts

Power Output (125-volt, 60-cycle supply)

Undistorted	1.0 watt
Maximum	1.5 watts

Loudspeaker

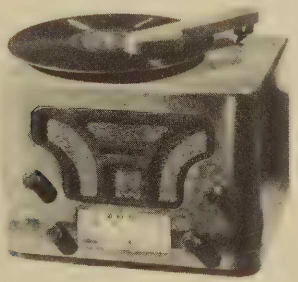
Type	5-inch Electrodynamic
Voice-Coil Impedance	5 ohms at 400 cycles

Phonograph	Synchronous (manual starting)
Records	10-inch and 12-inch, 78 r.p.m.
Pickup	Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup	1½ volts at 1,000 c.p.s. across ¼-meg. load

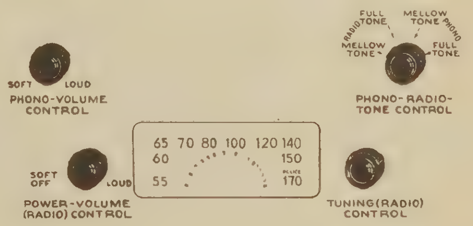
Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	9	12¼	9⅝
Chassis Base (inches)	2½	9	5¼

Overall Chassis Height (inches)	6
Weight	16 lbs. (shipping)
Tuning Drive Ratio	1 to 1



Model U-104 Front View and Controls



Alignment Procedure

Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1-mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

First Edition
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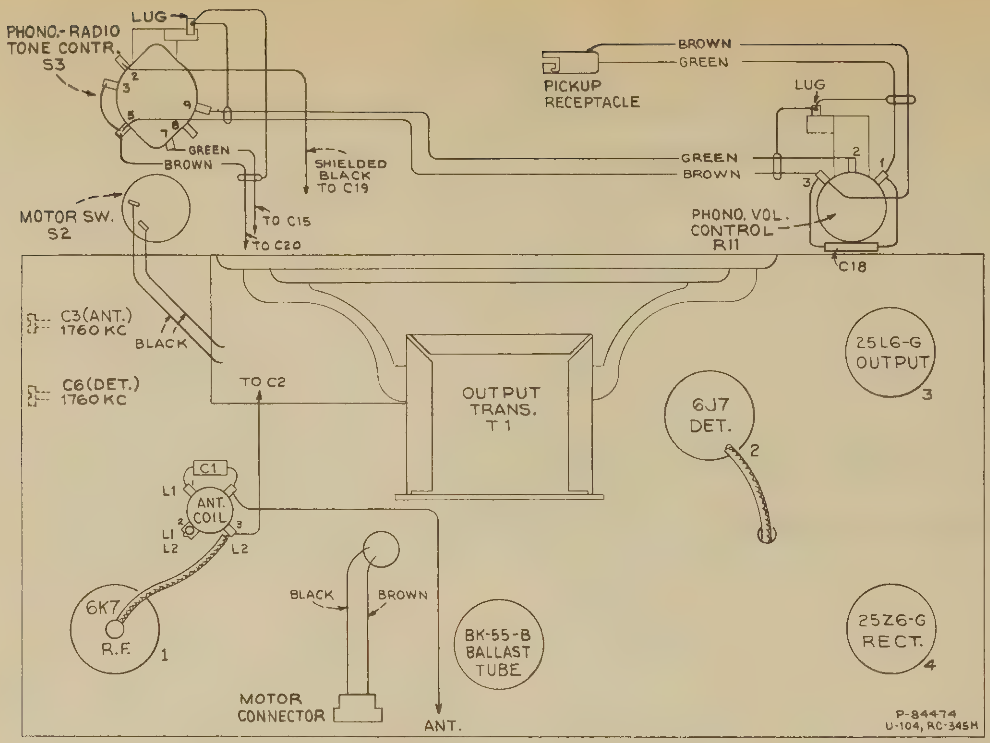
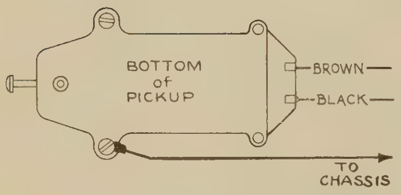
Printed in U. S. A.



PHONOGRAPH SERVICE DATA



Pickup Connections

The motor is started by turning the phono-radio tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

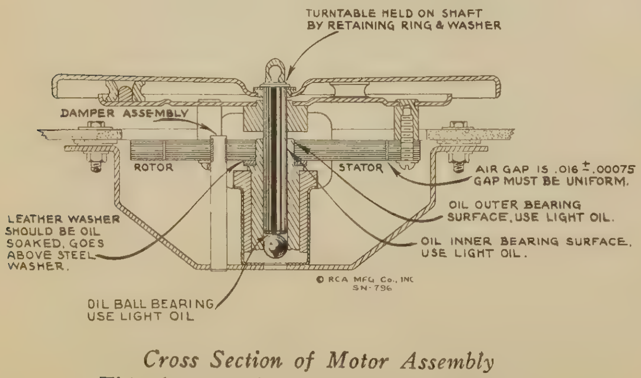
5. The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

Removing Rotor. — The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

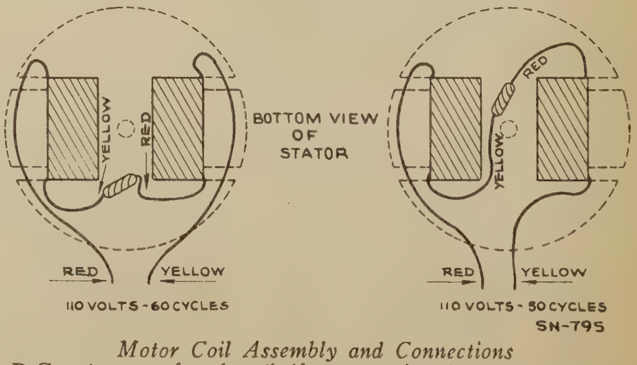
Rotor Adjustment.—Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Lubrication.—Oiling points are indicated in the diagram.

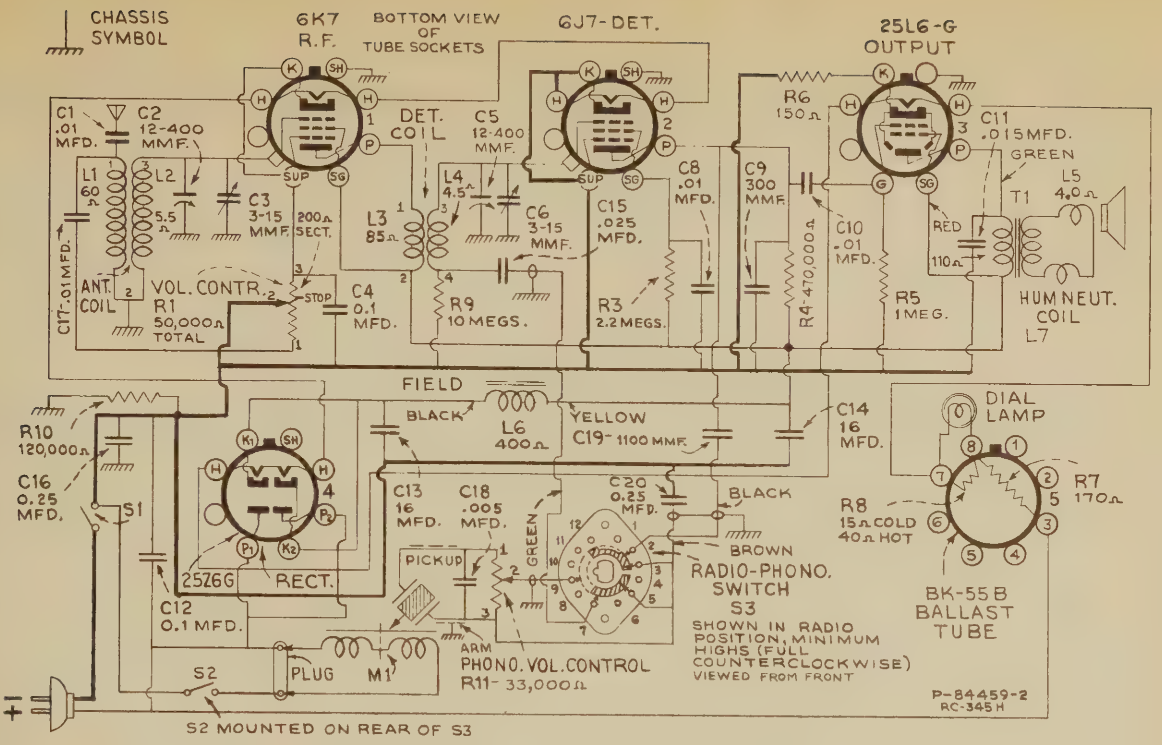
On Phonograph Operation, turn the radio volume control to minimum, and tune to a quiet point on the dial.


TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE. USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE. USE LIGHT OIL.
© RCA MFG. Co., INC
SN-796
OIL BALL BEARING USE LIGHT OIL

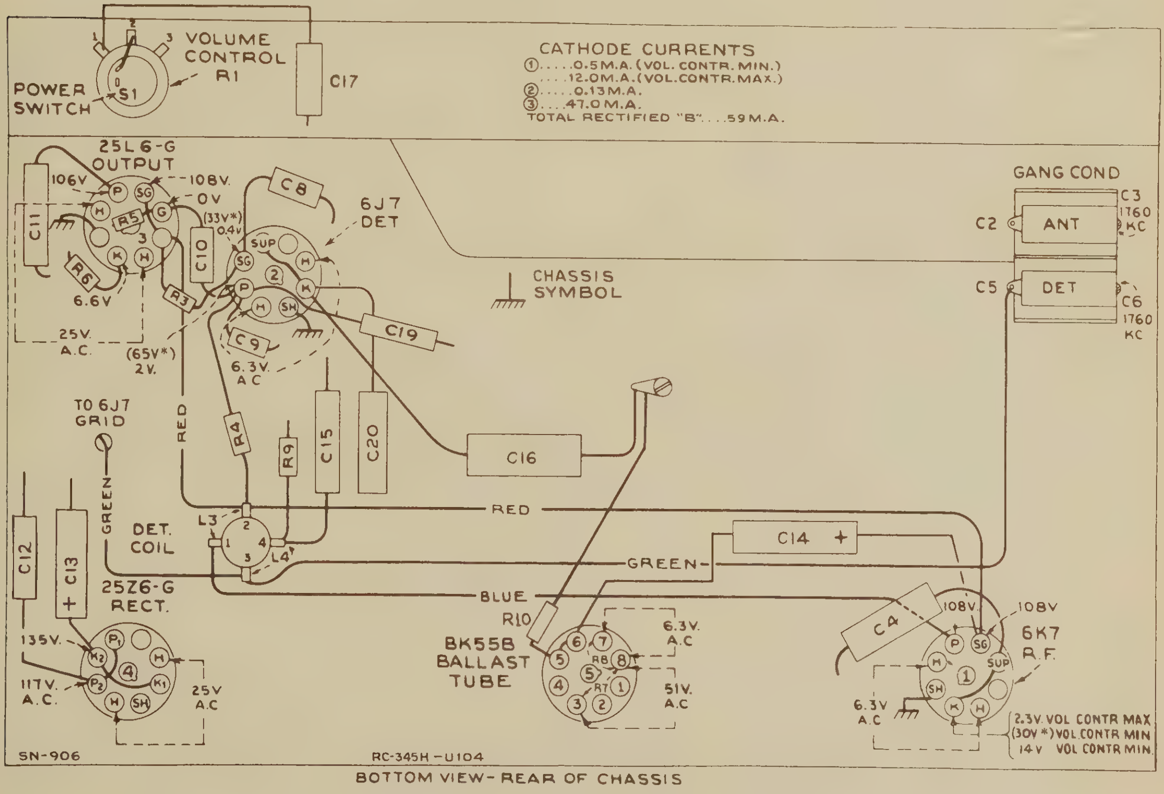
Cross Section of Motor Assembly
This drawing shows the lubrication points



Motor Coil Assembly and Connections
D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms



Schematic Circuit Diagram



R-F Wiring Diagram and Socket Voltages
Measurements made to common negative line, unless otherwise specified

* **Note:** Values with star (*) are **operating** voltages.
Values not starred are actual **measured** voltages.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117 volt 60 cycle supply.

Precautionary Lead Dress

1. Dress power cord and line bypass C12 away from detector coil.
2. Plate lead from 6K7 to detector coil must be dressed close to chassis and run through center of chassis.
3. Green lead from detector coil to gang must be dressed clear of other leads.
4. Green lead from antenna coil to C17 must be dressed against front apron.
5. Dress all heater leads close to base.
6. Yellow lead from cathode 6K7 to volume control must be dressed against chassis, under gang condenser and against front apron.

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100- to 200-mmfd. capacitor in series with the lead-in.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES (RC-345H)	
31198	Ballast—Ballast resistor tube (R7, R8)	
4287	Body—Connector body for dial lamp connector	
30883	Capacitor—300 mmfd. (C9)	
12635	Capacitor—1,100 mmfd. (C19)	
4838	Capacitor—.005 mfd., 1,000 V. (C18)	
4858	Capacitor—.01 mfd., 500 V. (C17)	
14393	Capacitor—.01 mfd., 300 V. (C1, C8, C10)	
11315	Capacitor—.015 mfd., 400 V. (C11)	
30938	Capacitor—.025 mfd. (C15)	
30899	Capacitor—0.1 mfd., 200 V. (C4)	
4839	Capacitor—0.1 mfd., 400 V. (C12)	
12484	Capacitor—0.25 mfd., 350 V. (C20, C16)	
31323	Capacitor—16 mfd., 150 V. (C13, C14)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—R.F. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	
14086	Cord—Power cord	
32634	Cord—Variable condenser drive cord	
31200	Dial—Station selector dial scale and plate assembly	
4286	Ferrule—Ferrule for dial lamp connector	
4340	Lamp—Pilot lamp	
31193	Lead—Antenna lead	
30868	Plug—2-contact female motor cable plug	
31196	Pointer—Station selector indicator pointer	
31198	Resistor—Ballast resistor tube (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13734	Resistor—120,000 ohms, ¼ watt (R10)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 megohm, ¼ watt (R5)	
12679	Resistor—2.2 megohms, ¼ watt (R3)	
13601	Resistor—10 megohms, ¼ watt (R9)	
31197	Shaft—Indicator pointer shaft and pulley	
31251	Socket—8-contact tube socket	
14171	Socket—Lamp socket assembly	
4284	Spring—Spring for dial lamp connector	
31096	Switch—Phono. switch (S2)	
31198	Tube—Ballast resistor tube (R7, R8)	
32209	Volume Control—(Phono.) (R11)	
31966	Volume Control—Volume control power switch (R1, S1)	
4285	Washer—Insulating washer for dial lamp connector	

STOCK No.	DESCRIPTION	
	PICKUP AND ARM ASSEMBLIES	
32226	Base—Pickup arm pivot shaft and base assembly	
4286	Bushing—Bushing and ferrule insert for connector cap	
4288	Cap—Pickup cable connector cap	
31050	Crystal—Pickup crystal and needle screw	
32227	Pickup arm and crystal complete—less mounting, Stock No. 31054	
12539	Screw—Pickup needle screw	
	MOTOR ASSEMBLIES	
9841	Motor—110-volt, 60-cycle—complete with mounting (M1)	
31034	Motor—110-volt, 50-cycle—less mounting (M1)	
31037	Rotor—Turntable and rotor lamination assembly—complete for 50-cycle operation	
31036	Rotor—Turntable and rotor lamination assembly—complete for 60-cycle operation	
31043	Stator—Stator assembly—complete with coils and laminations for 50-cycle operation	
31042	Stator—Stator assembly—comprising coils and laminations for 60-cycle operation	
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone (L5)	
31201	Speaker—Speaker complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31205	Crystal—Station selector dial crystal	
30863	Knob—Station selector or power switch knob	
31054	Mounting—Pickup arm rubber mounting, washer, and nut	
30870	Plug—2-contact male plug for motor leads	
14267	Screw—Chassis mounting screw	
31053	Screw—Motor mounting screw assemply complete	

RCA Victor

MODEL U-106

Nine-Tube, Three-Band, A-C, Phonograph-Radio

TECHNICAL INFORMATION AND SERVICE DATA

-1938 No. 4-

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2,300-7,500 kc
"Short Wave" (C)	7,500-22,000 kc
Six "Electric Tuning" Positions	540-1,550 kc

R-F Alignment Frequencies

"Medium Wave" (B)	6,000 kc (osc., ant.)
"Short Wave" (C)	20,000 kc (osc.)
"Standard Broadcast" (A)	600 kc (osc.), 1,500 kc (osc.)
Electric Tuning	Desired Station (osc., ant.)

Radiotron Complement

(1) RCA-6A8	First Detector and Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6H6	Second Detector and A.V.C.
(4) RCA-6F5	Audio Amplifier
(5) RCA-6F5	Inverter and Audio Amplifier
(6) RCA-6F6	Power Output
(7) RCA-6F6	Power Output
(8) RCA-6U5	"Magic Eye" Tuning Tube
(9) RCA-5T4	Full-Wave Rectifier

Dial Lamps

Radio Chassis (4)	Mazda No. 46, 6.3 volts, 0.25 amp.
Phonograph (1)	Mazda No. 40, 6.3 volts, 0.15 amp.

Power Supply Ratings	Radio Only	Total
A-6...105-125 volts, 60 cycles	120 watts	150 watts
A-5...105-125 volts, 50 cycles	125 watts	155 watts
B-2...105-125 volts, 25 cycles	120 watts	150 watts
C-6...105-125/200-250 volts, 60 cycles	120 watts	150 watts
C-5...105-125/200-250 volts, 50 cycles	125 watts	155 watts

Loudspeaker

Type	Twelve-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

Power Output

Undistorted	10 watts
Maximum	12 watts

Phonograph

Type	Automatic or Manual
Record Capacity	Eight 10-inch or Seven 12-inch
Turntable Speed	78 R.P.M.
Type of Pickup	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles

Mechanical Specifications

Height	34 inches
Width	37¼ inches
Depth	$19\frac{1}{16}$ inches
Net Weight	110 pounds
Shipping Weight	168 pounds
Chassis Base Dimensions	14½ inches x 7¾ inches x 3½ inches
Over-all Chassis Height	8 inches
Power-Supply Base Dimensions	9½ inches x $3\frac{15}{16}$ inches x $1\frac{13}{16}$ inches
Over-all Power Supply Height	7 inches

Operating Controls

Radio Panel	(1) Radio-Phonograph Control; (2) Volume (large knob), Power Switch - Tone (small knob); (3) Tuning (large knob), Range Selector (small knob, left to right, "Electric," "A," "B," and "C").
Phonograph Compartment	(1) Turntable "On-Off" Switch; (2) Index Lever
Tuning Drive Ratio	20 to 1

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General Description

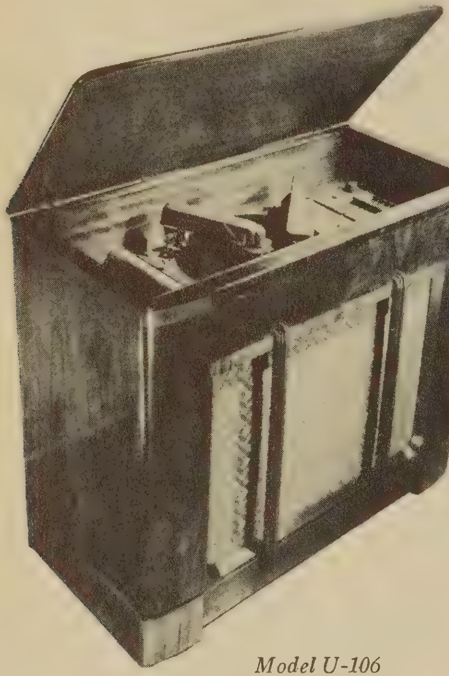
This combination instrument consists of a nine-tube, three-band, superheterodyne receiver and an automatically operated phonograph combined in a "low-boy" type cabinet. Features of design include "Electric Tuning" with push-button operation; "qumulative-wound" antenna "A"-band coil; antenna wave-trap; magnetite-core adjusted i-f transformers and low-frequency "A"-oscillator tracking; "Magic Eye" tuning tube; aurally compensated volume control on both radio and phonograph; continuously variable high-frequency tone control; automatic volume control; audio amplifier and phase-inverter amplifier; push-pull power-output stage; crystal pickup; and an improved dust-proof electrodynamic loudspeaker. The power-supply unit is on a separate chassis.

The phonograph board is mounted alongside the radio panel. Dependable turntable drive is secured with a synchronous motor, ample in size to also give driving power for the automatic mechanism. Proper needle placement is assured by the use of a needle gauge plate and two pickup arm supports when changing needles. The record changer may be operated automatically or manually on either ten-inch or twelve-inch records.

Circuit Arrangement

The circuit consists of a combined first-detector and oscillator stage; i-f amplifier stage; diode-detector and automatic-volume-control stage; a-f amplifier stage; a-f amplifier, phase-inverter stage; push-pull power-amplifier stage; tuning indicator "Magic Eye"; and a full-wave rectifier. The antenna coil is constructed with a special type winding ("qumulative") to provide increased sensitivity and selectivity on the "Standard broadcast" band. A fixed-tuned wave trap reduces i-f interference entering the antenna circuit.

Electric tuning is accomplished in a simple manner. There are six trimmers for tuning the single antenna coil and six magnetite-core adjusted oscillator coils. A desired station is



Model U-106

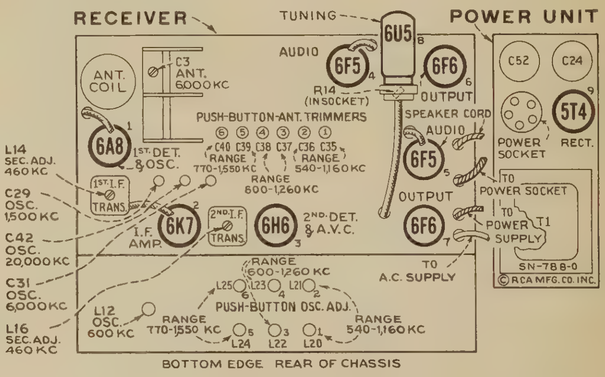


Figure 1—Radiotron and Trimmer Locations

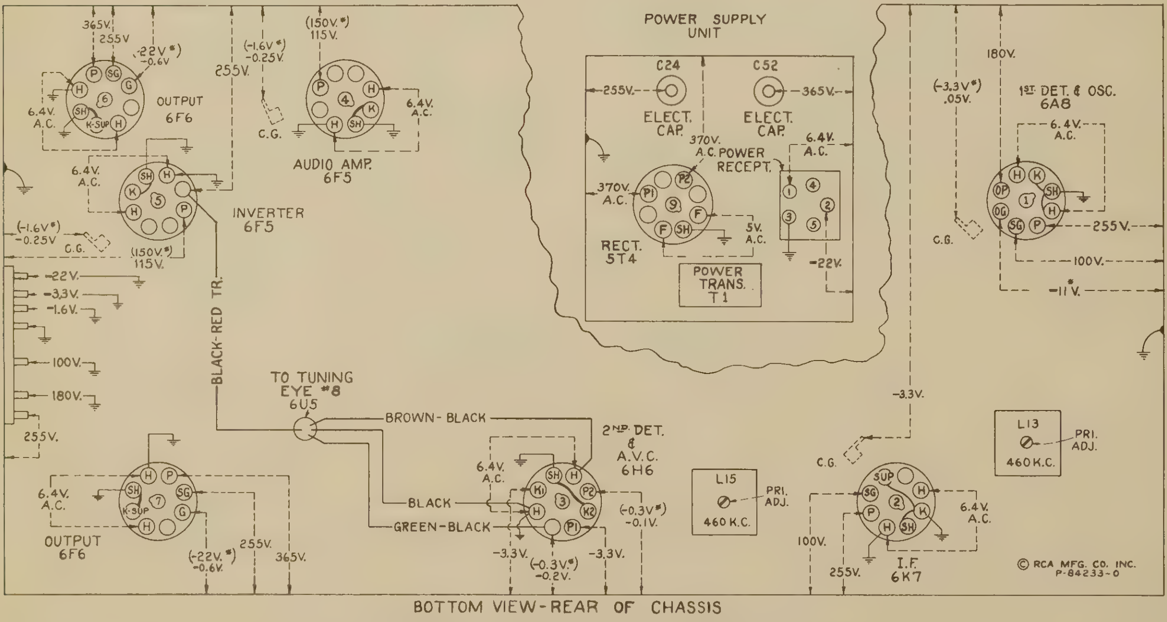


Figure 2—Radiotron Socket Voltages and Trimmer Locations

Measured at 117 volts, 60-cycle supply. Measurements made with set tuned to quiet point near 1,000 kc; volume control at minimum; Radio-Phonograph switch to "Radio"; using a 1,000-ohm-per-volt meter having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.) **Measurements made to chassis unless otherwise indicated.**

Note.—Values with star (*) are **operating** voltages. Values not starred are actual **measured** voltages.

tuned accurately, quickly, and silently by pressing a push-button which instantly puts the pre-adjusted coil and trimmer into use. Oscillator frequency drift is reduced to a minimum by use of a temperature-compensating capacitor (C28) in the oscillator circuit along with magnetite-core adjusted oscillator coils.

Service Data

Loudspeaker.—Centering the loudspeaker voice-coil is made in the usual manner with three, narrow, paper or celluloid feelers after first removing the front dust-cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. The dust-cover should be cemented back in place with ambroid upon completion of the adjustment.

Precautionary Lead Dress.—(1) Filament leads should be dressed away from audio grids. (2) Output plate leads should be dressed away from radio-phonograph switch. Maintain original size, length, and position of: (3) All leads from range switch to antenna and oscillator coils. They should be as short, rigid, and separated as far as possible from other leads and chassis. (4) Lead from oscillator coil to ground. (5) Leads from gang condenser to range selector. (6) Leads of "C"-band antenna series condenser, C2. If the r-f and i-f wiring is altered during servicing the receiver must be re-aligned.

Radiotron Cathode Current Readings

Measured with Milliammeter Connected at Tube Socket Cathode Terminals Under Conditions Similar to Those of Voltage Measurements

(1)	RCA-6A8—1st Det. and Osc.	11 ma.
(2)	RCA-6K7—I-F Amp.	8 ma.
(3)	RCA-6H6—2nd Det. and A.V.C.	———
(4)	RCA-6F5—Audio Amplifier	0.29 ma.
(5)	RCA-6F5—Inverter	0.29 ma.
(6)	RCA-6F6—Output	28.5 ma.
(7)	RCA-6F6—Output	28.5 ma.
(8)	RCA-6U5—Tuning	1.5 ma.
(9)	RCA-5T4—Rectifier	110 ma.**

(** Cannot be measured at socket)

Alignment Procedure

Calibrate the tuning dial by adjusting dial pointer to the low-frequency (end) calibration mark on dial with the gang tuning-condenser plates in full-mesh position. The pointer is soldered in place on the drive cable.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 2.

Cathode-ray alignment is highly preferable; the connections to the chassis are shown on figure 4. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver "G" (ground) terminal for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator. "Min. Eye" means minimum width of dark sector of "Magic Eye" or greatest deflection.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Order of Alignment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting					
1	6K7 I-F Grid Cap	.001 Mfd.	460 kc	"Standard Broadcast"	No Signal 550-750 kc	2nd I-F Trans.	L15 and L16	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	460 kc	"Standard Broadcast"	No Signal 550-750 kc	1st I-F Trans.	L13 and L14	Max. (peak)
3	Ant. Term. A1	300 Ohms	6,000 kc	"Medium Wave"	6 mc	"B" Osc.	C31	Max. (peak)
4	Ant. Term. A1	300 Ohms	6,000 kc	"Medium Wave"	6 mc	"B" Ant.	C3	Max. (peak)
5	Ant. Term. A1	300 Ohms	20,000 kc	"Short Wave"	20 mc	"C" Osc.	C42	Max. (peak)*
6	Ant. Term. A1	200 Mmfd.	600 kc	"Standard Broadcast"	600 kc	"A" L-F Osc.	L12	Max. (peak)
7	Ant. Term. A1	200 Mmfd.	1,500 kc	"Standard Broadcast"	1,500 kc	"A" H-F Osc.	C29	Max. (peak)
8	Ant. Term. A1	200 Mmfd.	600 kc	"Standard Broadcast"	600 kc	"A" L-F Osc.	L12	Max. (peak)
9	Ant. Term. A1	200 Mmfd.	1,500 kc	"Standard Broadcast"	1,500 kc	"A" H-F Osc.	C29	Max. (peak)
10	Connect an antenna to receiver Ant. Term. A. See Electric Tuning Alignment described below.		540-1,160 kc	"Electric Tuning"	540-1,160 kc	"A" Osc. 1 & Ant. 1	L20 and C35	Min. Eye
11			540-1,160 kc	"Electric Tuning"	540-1,160 kc	"A" Osc. 2 & Ant. 2	L21 and C36	Min. Eye
12			600-1,260 kc	"Electric Tuning"	600-1,260 kc	"A" Osc. 3 & Ant. 3	L22 and C37	Min Eye
13			600-1,260 kc	"Electric Tuning"	600-1,260 kc	"A" Osc. 4 & Ant. 4	L23 and C38	Min. Eye
14			770-1,550 kc	"Electric Tuning"	770-1,550 kc	"A" Osc. 5 & Ant. 5	L24 and C39	Min. Eye
15			770-1,550 kc	"Electric Tuning"	770-1,550 kc	"A" Osc. 6 & Ant. 6	L25 and C40	Min. Eye

* Use maximum capacity peak if two peaks can be obtained. Check for image signal by shifting receiver dial to 20.92 mc.

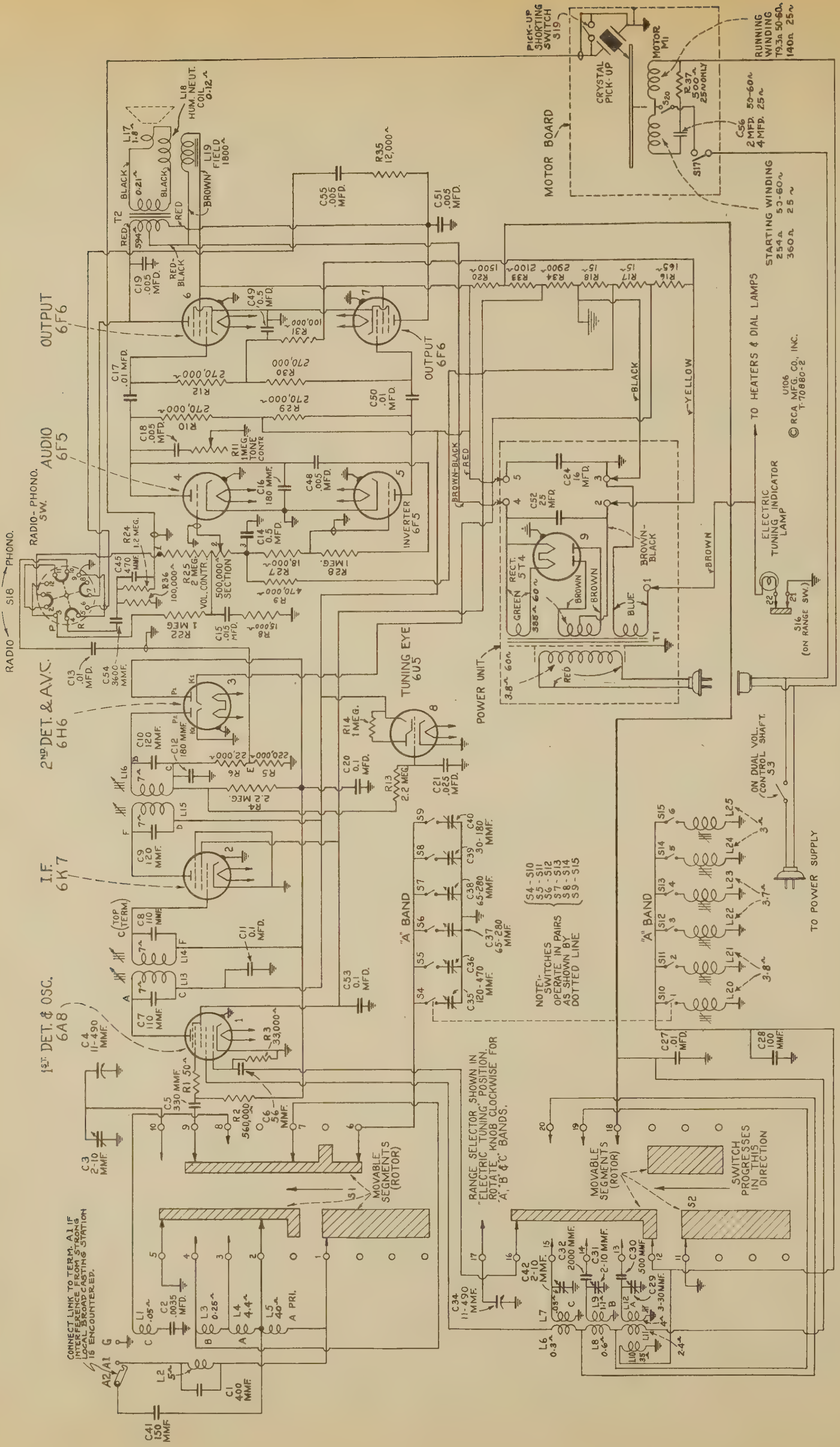


Figure 3—Schematic Circuit Diagram

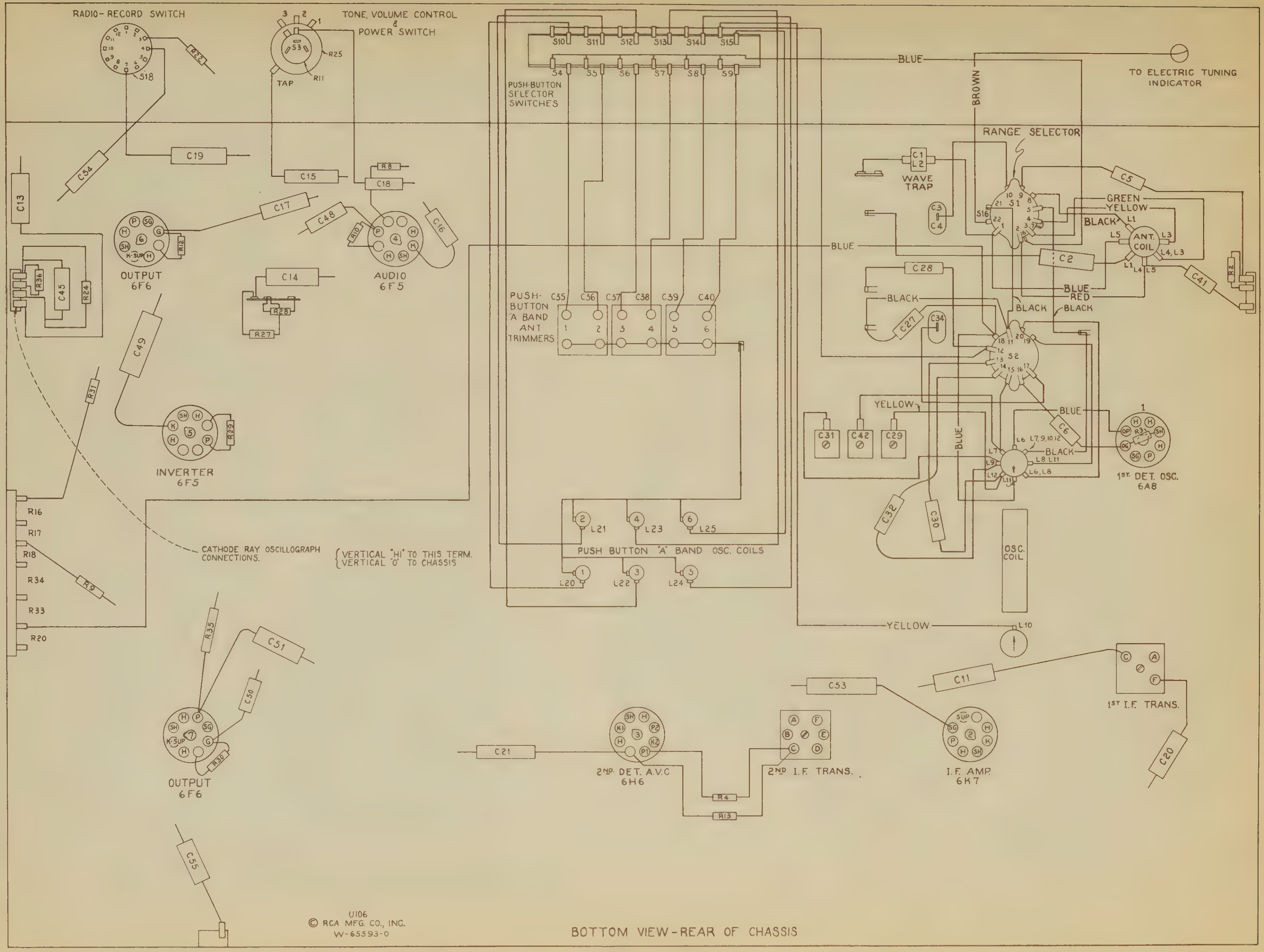


Figure 4—Component Part Location and R-F Wiring Diagram
(See Figure 2 for Component Parts in Power Unit)

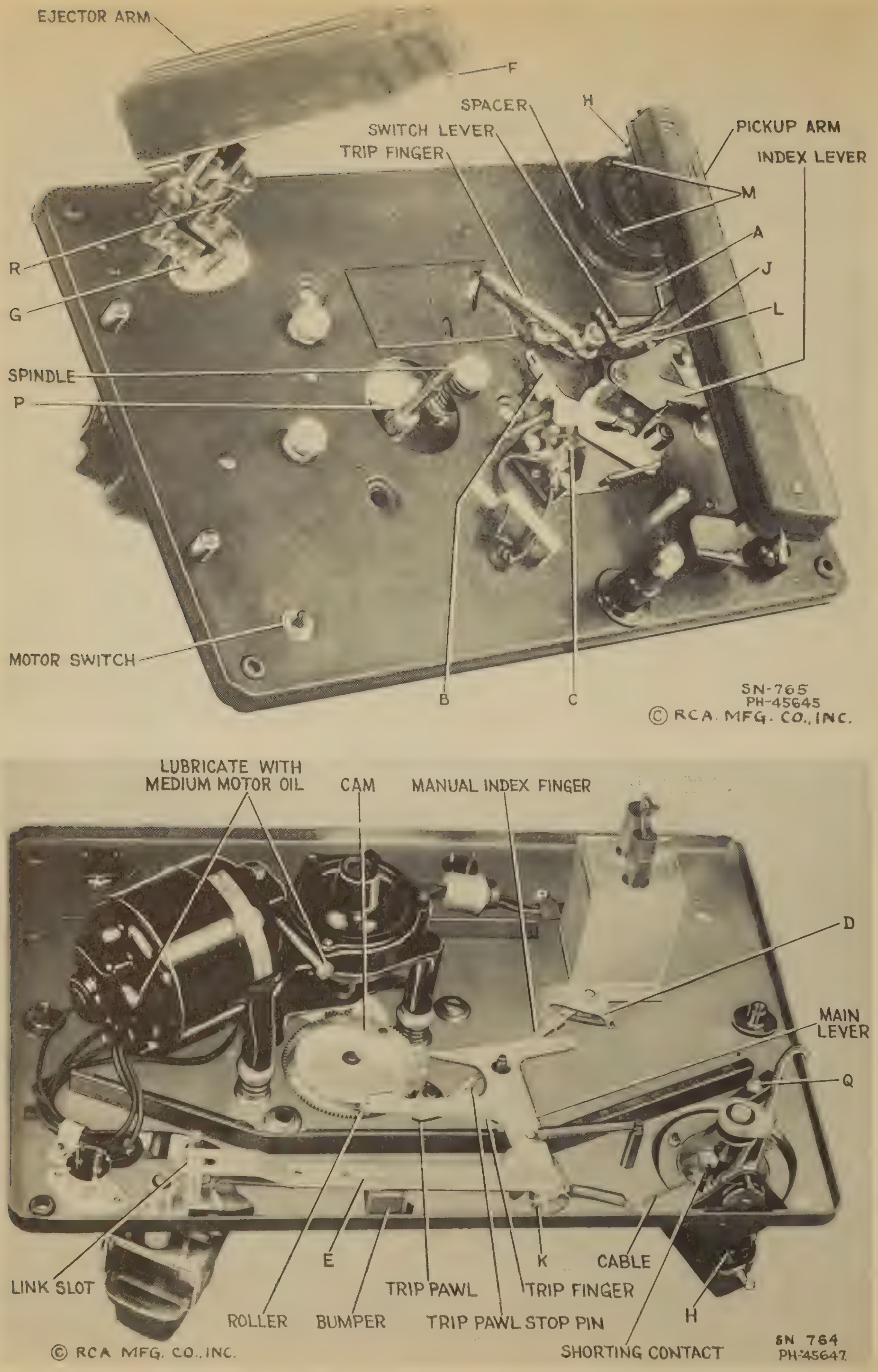


Figure 5—Automatic Record Changer Adjustments

Automatic Record Changer

Under normal operating conditions, service requirements on this mechanism should be negligible. Occasionally, however, certain adjustments may be necessary. It is important to refrain from forcing the mechanism if there is a tendency to bind or jam, when operating or adjusting, since bent levers and possibly broken parts may result.

Record Changer Adjustments.—Mount motor-board on a level support. Remove turntable and cover at right of turntable. Adjustment locations are designated on figure 5 as A, B, etc. The adjustments are explained under corresponding symbols below. Perform adjustments in the following order:

A.—Trip rod "A" should be engaged in "Switch Lever" slot. Adjust trip rod "A" to obtain about 1/8 of an inch clearance from motor-board.

B.—Adjust "B" to the position shown.

C.—With "Index Lever" in "Manual" position, "Pickup Arm" rotated to extreme left, and switch tripped to open contacts "C," adjust contact points "C" by bending the stiff contact arm until points are opened 10 to 30 thousandths of an inch.

D.—With "Index Lever" in "Manual" position, release set screw "D" and force "Manual Index Finger" as far as it will go towards "Trip Pawl Stop Pin." Tighten set screw.

E.—Adjust at "E" to provide approximately 1/32 of an inch between outer end of "Link Slot" and screw when rubber "Bumper" is in contact with stop bracket.

F. and G.—Remove rubber silencer at "F" and adjust "F" and "G" so ejector tip "F" is in line with "Spindle." Longitudinal movement, with respect to "Ejector Arm," may be effected by loosening hex. head at "F." Lateral movement of "Ejector Arm" may be effected by adjustment "G."

H.—Adjust "H" so under side of pickup head can be raised 2½ inches above motor-board.

J.—Adjust screw "J" until friction will just force "Trip Finger" to move "Trip Pawl" when "Index Lever" is in "12" inch position.

N.—Adjust needle pressure by turning screw under center of "Pickup Arm" so that a force of 72 grams (2.5 ounces) is required to lift needle from record. Hook scale under needle screw to measure force.

K.—Adjustment "N" must be performed prior to this adjustment. With a 12-inch record on turntable, turn on "Motor Switch," place "Index Lever" to "12" position and adjust "K" so that "Cable" tension will allow needle to lower slowly on start of record at completion of eject cycle. Turn "Motor Switch" off after eject cycle is completed and check to see that "Cable" is slightly loose when "Pickup Arm" is moved against "Spindle." Replace turntable and put a needle in "Pickup."

L.—Adjust "L" so needle will drop into center of smooth portion at the start of a 12-inch record when "Index Lever" is in "12" inch position and "Pickup Arm" is to extreme right.

M.—Loosen three screws "M" and rotate "Spacer" until pointer on "Spacer" is in line with screw to right of "Pickup Arm."

P.—Adjust turntable height by insertion or removal of thrust washers at "P" so ejector tip "F" will not eject bottom 12-inch record but will eject second from bottom record.

Q.—Adjust position of shorting switch at "Q" so switch closes when needle is just outside a 12-inch record.

R.—Adjust screw "R" upward just enough so that with one record on turntable and ejector tip "F" resting on record surface, there is 1/32 of an inch clearance between screw "R" and "Ejector Arm."

Record Changer Service Hints.—A general perusal of the following possible troubles which may be experienced with this mechanism, together with the adjustment or adjustments to be applied for same, will enable one to ascertain that which pertains to the instrument at hand:

1.—"Ejector Arm" goes through normal cycle but does not eject records. Adjust "F" and "G." See that "Spindle" slides freely.

2.—Ejects bottom record. Lower turntable by removing thrust washers at "P."

3.—Ejects records properly down to second from bottom of pile. Raise turntable by placing thrust washers at "P."

4.—Eject cycle does not start after needle reaches eccentric groove. Adjust "J" (turn screw clockwise).

5.—Eject cycle starts before eccentric record groove is reached. Adjust "J" (turn screw counter-clockwise). Set "Index Lever" to "12" inch or "10" inch position after starting to play record. Do not jar motor-board during automatic operation.

6.—Lateral movement of "Pickup Arm" has no control over starting and stopping. Adjust clearance of rod "A." See that rod "A" engages in slot of "Switch Lever."

7.—Fails to eject top record of a pile because "Ejector Arm" strikes record in returning to center at end of eject cycle. Adjust screw "R" upward to provide greater incline so that roller in "Ejector Arm" will roll back during cycle.

8.—Pickup strikes record during eject cycle. Adjust "K" and "H."

9.—Starts playing record several grooves in from beginning or needle misses record entirely. Adjust "L."

10.—Needle falls on smooth portion at start of record but does not move into playing groove. Adjust "M." Check to see that motor-board is level.

11.—Automatic stop does not operate after needle reaches eccentric groove. Adjust "B" and "C."

12.—Motor does not re-start when "Pickup" is returned to rest position. Adjust "C." See that switch mechanism parts move freely and springs are functioning.

13.—Starts eject cycle although set for "Manual" operation. Adjust "D."

14.—Noise in loudspeaker while changing needles. Clean "Shorting Contact" and adjust "Q."

15.—"Wow" in record reproduction.—Instrument should be warmed to about 65° F. Ejector tip should be centered and free to rotate (adjustments "F" and "G"). There should be no solid particles on gear teeth or in grease; no tendency to bind. Turntable plate should be in dynamic balance and "Spindle" should be straight. Proper lubrication is important.

Lubrication.—Clean motor gear-box thoroughly before regreasing. Apply less than a tablespoonful of a grease, such as "Cities Service No. 7035-A1" or "Koolmotor Universal Trojan No. 1," directly on gears, taking care to get none in rotor bearings. Put medium motor oil (S.A.E. No. 30) in the oil holes. Cover main gear and cam of automatic mechanism with a light grease such as "Socony-Vacuum No. 2." Any good household oil, such as "3-IN-ONE" is suitable for the ejector-tip "F" bearing.

"Electric Tuning" Alignment

Each push button connects a particular oscillator coil and antenna trimmer condenser. The tuning of this coil and this condenser selects a station.

The frequency ranges for various push-buttons are:

(1) 540 to 1,160 kilocycles—Adjust L-20 and C-35
(2) 540 to 1,160 kilocycles—Adjust L-21 and C-36
(3) 600 to 1,260 kilocycles—Adjust L-22 and C-37
(4) 600 to 1,260 kilocycles—Adjust L-23 and C-38
(5) 770 to 1,550 kilocycles—Adjust L-24 and C-39
(6) 770 to 1,550 kilocycles—Adjust L-25 and C-40

The following are the steps in aligning a push-button selector:

(1) Manually tune to desired station, then switch range selector to "Electric Tuning."
(2) Press a push-button whose frequency range includes the station.
(3) Adjust oscillator coil corresponding to that push-button, to receive the desired station.
(4) Adjust antenna condenser for that push-button to receive the desired station.
(5) Check alignment by switching to manual tuning. Magic Eye will not change appreciably if alignment is correct.
(6) After receiver has warmed, repeat above adjustments.

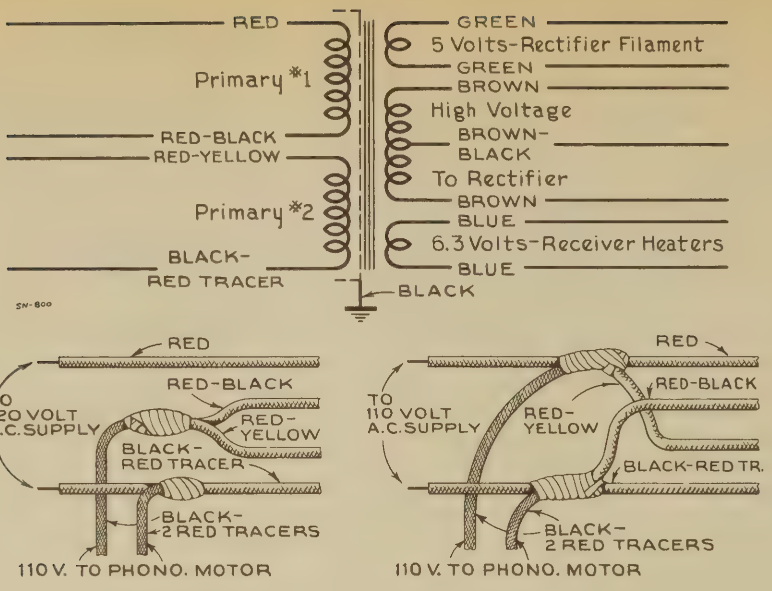


Figure 6—Schematic and Primary Lead Connections for 110-220 volt Power Transformer (Stock No. 30869)
Resistance of each primary winding, 6.3 ohms.
High voltage secondary winding, 260 ohms total.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30755	Arm—Band indicator operating arm—fastens on range switch shaft	
14384	Belt—Drive belt	
30864	Board—Antenna and ground terminal board	
30752	Bracket—Tuning tube mounting bracket and clip	
30754	Cable—Band indicator operating cable	
30728	Cable—Pickup cable and connector	
11350	Cap—Grid contact cap	
30766	Cap—Rubber cap for tuning tube	
30751	Capacitor—Trimmer comprising two sections each 2-10 Mmfd. and one section 3-30 Mmfd. (C29, C31, C42)	
30750	Capacitor—Dual trimmer 30-180 Mmfd. each section (C39, C40)	
30764	Capacitor—Dual trimmer 65-280 Mmfd. each section (C37, C38)	
30765	Capacitor—Dual trimmer 120-470 Mmfd. each section (C35, C36)	
12723	Capacitor—56 Mmfd. (C6)	
30769	Capacitor—100 Mmfd. (C28)	
14262	Capacitor—110 Mmfd. (C7, C8)	
12404	Capacitor—120 Mmfd. (C9, C10)	
12725	Capacitor—150 Mmfd. (C41)	
12406	Capacitor—180 Mmfd. (C12)	
13003	Capacitor—180 Mmfd. (C16)	
12952	Capacitor—330 Mmfd. (C5)	
30433	Capacitor—470 Mmfd. (C45)	
30768	Capacitor—500 Mmfd. (C30)	
30767	Capacitor—2,000 Mmfd. (C32)	
12811	Capacitor—3,600 Mmfd. (C54)	
30303	Capacitor—.0035 Mfd. (C2)	
4838	Capacitor—.005 Mfd. (C18, C19, C48, C51, C55)	
14393	Capacitor—.01 Mfd. (C13, C17, C27, C50)	
11315	Capacitor—.015 Mfd. (C15)	
4870	Capacitor—.025 Mfd. (C21)	
4839	Capacitor—0.1 Mfd. (C11, C20, C53)	
30867	Capacitor—0.5 Mfd. (C14, C49)	
30745	Coil—Antenna coil and shield A, B, C, bands (L1, L3, L4, L5)	
30749	Coil—Oscillator coil A band (L20 or L21)	
30748	Coil—Oscillator coil A band (L22 or L23)	
30747	Coil—Oscillator coil A band (L24 or L25)	
30746	Coil—Oscillator coil A, B, C bands (L6, L7, L8, L9, L10, L11, L12)	
30740	Condenser—2-gang variable tuning condenser (C3, C4, C34)	
5040	Connector—4-contact female for speaker cable	
14781	Connector—5-contact male for power cable	
30868	Connector—2-contact female for A.C. switch cable	
14783	Connector—2-contact female for compartment lamp cable	
30743	Control—Volume control, tone control and power switch in one unit (R11, R25, S3)	
30763	Cord—Indicator drive cord	
30846	Core—Adjustable core for push button coils	
30861	Dial—Station selector dial scale	
30753	Disc—Band indicator disc with colored segment	
30741	Drive—Variable condenser vernier drive shaft and pinion gear	
30587	Drum—Drive belt drum—fastens on variable condenser vernier drive shaft	
30761	Drum—Indicator cord drum—fastens on variable condenser rotor shaft	
14341	Idler—Drive idler pulley, bracket and spring	
30762	Indicator—Indicator pointer and slider	
5226	Lamp—Dial lamp	
30757	Pulley—Large size pulley for indicator cord—located at top left corner of dial bracket	
30758	Pulley—Medium size pulley for indicator cord—located at top right side of dial bracket	
14697	Pulley—Small size pulley for indicator cord—located at top right hand corner of dial bracket	
30771	Resistor—50 ohms, flexible type, 2½ watts (R1)	
30866	Resistor—12,000 ohms, 1 watt (R35)	
3998	Resistor—15,000 ohms, ¼ watt (R8)	
11175	Resistor—18,000 ohms, ¼ watt (R27)	
14284	Resistor—22,000 ohms, 1/10 watt (R6)	
12454	Resistor—33,000 ohms, ¼ watt (R3)	
14560	Resistor—100,000 ohms, ¼ watt (R31, R36)	
11398	Resistor—220,000 ohms, 1/10 watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R10, R12, R29, R30)	
11172	Resistor—470,000 ohms, ¼ watt (R9)	
11397	Resistor—560,000 ohms, 1/10 watt (R2)	
12013	Resistor—1 Megohm, 1/10 watt (R14)	
13730	Resistor—1 Megohm, ¼ watt (R22, R28)	
30208	Resistor—1.2 Megohm, ¼ watt (R24)	
12679	Resistor—2.2 Megohm, ¼ watt (R4, R13)	
30865	Resistor—Voltage divider comprising one 1,500 ohm, one 2,100 ohm, one 2,900 ohm, two 15 ohm and one 165 ohm sections (R16, R17, R18, R20, R33, R34)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
30760	Shaft—Tuning knob shaft and pulley	
5119	Socket—3-contact socket for speaker cable	
13871	Socket—6-contact tuning tube socket	
11196	Socket—8-contact Radiotron socket	
14114	Socket—Dial lamp socket—open type	
14171	Socket—Dial lamp socket—shell type	
30756	Spring—Band indicator tension spring	
14342	Spring—Idler pulley tension spring	
30585	Spring—Indicator cord tension spring	
12007	Spring—Retaining spring for core Stock No. 30846	
30742	Switch—Range switch (S1, S2, S16)	
30862	Switch—Radio-record switch (S18)	
30744	Switch—Tuning push button switch (S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15)	
14376	Transformer—First I.F. transformer (L13, L14, C7, C8)	
14283	Transformer—Second I.F. transformer (L15, L16, C9, C10, C12, R5, R6)	
13838	Trap—Wave trap (L2, C1)	

POWER UNIT ASSEMBLIES

STOCK No.	DESCRIPTION	
5212	Capacitor—16 Mfd. (C24)	
14531	Capacitor—25 Mfd. (C52)	
14783	Connector—2-contact female connector for motor power cable	
30870	Connector—2-prong male connector of A.C. cable	
14279	Socket—5-contact socket for chassis power cable	
11196	Socket—Rectifier tube socket	
30869	Transformer—Power transformer 110 and 220 volts, 50 to 60 cycles (T1)	

EJECT ARM ASSEMBLIES

STOCK No.	DESCRIPTION	
14753	Arm—Eject arm, complete	
11533	Ball—1/16-inch diameter steel ball	
10129	Ball—3/16-inch diameter steel ball	
11529	Bearing—Ejector tip bearing and nut	
11538	Bracket—Eject arm bracket	
11537	Collar—Eject arm shaft collar and set screw	
11536	Cushion—Counter balance roller cushion—located inside of eject arm	
4055	Post—Vertical adjustment post—located on eject arm bracket	
3729	Roller—Eject arm counter balance roller—located inside of eject arm	
4580	Screw—No. 6—32-3/16-inch square head set screw for eject arm collar	
11534	Screw—No. 8—36-7/32-inch special screw for eject arm tip center adjustment	
11535	Shaft and Collar—Eject arm vertical action shaft and collar assembly	
11528	Silencer—Ejector tip silencer	
4067	Spring—Ejector arm bracket spring	
11531	Spring—Ejector tip spring	
11530	Tip—Ejector tip with tip center, adjusting screw and cap	
11539	Yoke—Eject arm yoke assembly	

PICKUP AND ARM ASSEMBLIES

STOCK No.	DESCRIPTION	
10941	Ball—Steel ball for pivot shaft bearing	
3204	Cable—Pickup lift cable	
30101	Cable—Shielded pickup cable—connects pickup unit to shorting switch	
12850	Damper—Pickup arm pivot shaft damper—comprising one upper rubber damper and bearing, one lower rubber damper and one lower bearing	
14820	Mechanism—Pickup mechanism, complete with needle screw	
14818	Pickup and arm, complete	
12546	Plug—Pivot shaft bearing plug	
14823	Rod—Pickup arm brake trip rod	
14822	Screw—Needle screw	
14824	Screw—Pickup mechanism terminal	
14913	Spring—Pickup arm tension spring	
14821	Support—Pickup mechanism support	

OPERATING MECHANISM

STOCK No.	DESCRIPTION	
14754	Cam—Cam and gear assembly	
6808	Clutch—Trip lever friction clutch	
14756	Cover—Metal cover for trip lever and friction finger assembly	
6809	Finger—Manual index lever finger assembly	
3670	Finger—Friction finger assembly	
11554	Lever—Manual index lever—less pin	
14755	Lever—Main lever and link assembly	
14914	Lever—Pickup lift cable lever	
11555	Lever—Trip lever and friction clutch assembly	
30624	Pawl—Trip pawl assembly	
3672	Pin—Manual index lever pin	
13635	Plate—Eject arm actuating plate assembly	
4564	Screw—Manual index lever finger set screw	
4059	Screw—Trip lever clutch tension adjustment screw	
4566	Screw—Special screw used to fasten main lever and link assembly bushing	
13637	Spacer—Pickup arm mounting spacer	
13638	Spring—Actuating spring	
4565	Spring—Manual index lever finger tension spring	
4061	Spring—Main spring lever tension spring or pickup lift cable spring	
2893	Spring—Trip lever latch plate tension	
3676	Spring—Cam and gear pawl tension spring	
14916	Spring—Pickup lift lever spring	
4125	Spring—Eject arm horizontal action tension spring	
13636	Stud—Pickup arm lift cable stud and nut	
2917	Washer—Spring washer—"U" type	

AUTOMATIC SWITCH ASSEMBLIES

STOCK No.	DESCRIPTION	
3994	Cover—Motor switch cover	
10184	Plate—Automatic brake latch plate	
10174	Springs—Automatic brake springs	
6805	Switch Assembly—Automatic switch, complete	
3322	Switch—Motor switch (S18)	

MOTOR ASSEMBLIES

STOCK No.	DESCRIPTION	
9651	Motor—105-125 volts—50 cycles (M1)	
9650	Motor—105-125 volts—60 cycles (M1)	
12050	Suspension Spring — Motor mounting spring, washer and stud assembly — comprising six springs, six cup washers, three spring washers and three studs	

MOTOR BOARD ASSEMBLIES

STOCK No.	DESCRIPTION	
11881	Base—Phonograph compartment lamp socket and base	
14819	Cable—Shielded pickup cable—connects shorting switch to compensator pack	
12051	Capacitor—2 Mfd., complete with 2-contact male connector for use with motor, Stock Nos. 9650 or 9651 only (C56)	
14805	Connector—2-contact male connector for Stock Nos. 12051, 13101 or phono compartment lamp leads	
4577	Connector—2-contact male connector for motor cable	
14783	Connector—2-contact female connector for motor leads	
14760	Cup—Used-needle cup	
14762	Damper—Turntable damper	
11553	Escutcheon—Index escutcheon engraved "Manual—12—10"	
14688	Knob—Needle rest knob	
4340	Lamp—Phonograph compartment lamp—6.3 volts	
3764	Nut—Cap nut for motor board suspension	
14761	Rest—Pickup rest	
14825	Roller—Pickup arm cable guide roller—comprising bracket, roller and guide pin	
11711	Shade—Phonograph compartment lamp shade	
14758	Spacer—Pickup arm mounting spacer	
14270	Spring—Retaining spring for knob, Stock No. 14758	
4565	Spring—Tension spring for needle rest	
30157	Switch—Pickup shorting switch (S19)	
4671	Switch—Operating switch—toggle switch (S17)	
14759	Turntable, complete	

REPRODUCER ASSEMBLIES

Speaker RL-70E-2

STOCK No.	DESCRIPTION	
13866	Cap—Dust cap for cone center	
11234	Coil—Field coil (L19)	
11469	Coil—Hum neutralizing coil (L18)	
12667	Cone—Reproducer cone and dust cap (L17)	
5039	Plug—4-contact male plug for reproducer	
14535	Reproducer, complete	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	

MISCELLANEOUS ASSEMBLIES

STOCK No.	DESCRIPTION	
30778	Button—Automatic station selector push button	
14747	Card—Station call letter cards	
30780	Cushion—Rubber cushion for automatic station selector button	
11606	Cap—Pilot lamp cap	
30774	Escutcheon—Station selector escutcheon complete with side panels and buttons	
30775	Escutcheon—Station selector escutcheon center section only—less side panels and buttons	
30776	Escutcheon—Station selector escutcheon right and left hand sections only	
11607	Holder—Needle card holder	
30773	Knob—Volume control knob	
14269	Knob—Range switch and radio-record switch knob	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
14359	Knob—Station selector knob		30609	Socket—Pilot lamp socket	
30772	Knob—Tone control and power switch knob		30330	Spring—Retaining spring for knob Stock No. 30772	
5226	Lamp—Pilot lamp		14270	Spring—Retaining spring for knobs Stock No. 30773 and Stock No. 14269	
4560	Screw—Chassis mounting screw and washer assembly (upper)		4982	Spring—Retaining spring for knob Stock No. 14359	
30872	Screw—Chassis mounting screw and cushion (lower) (sufficient for one chassis)		3763	Suspension — Motorboard suspension assembly comprising bolts, washers, spring and cap nuts	
30779	Shield—Celluloid shield for call letter cards				
30777	Shield—Finished metal shield and screws for automatic station selector button panel				

RCA Victor

MODEL U-111

Five-Tube, Single-Band, A-C, Phonograph-Radio

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 13—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

Frequency Range	540-1,720 kc
R-F Alignment Frequency	1,500 kc (osc., ant.)
Intermediate Frequency	455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8	First Det., and Osc.
(2) RCA-6K7	Intermediate Amp.
(3) RCA-6Q7-G	Second Det., A-F, and A.V.C.
(4) RCA-6K6-G	Power Output
(5) RCA-5Y3-G	Rectifier
Dial Lamp	Mazda No. 44, 6.3 volts, 0.25 amps.

POWER OUTPUT (125-volt, a-c supply)

Undistorted	2.0 watts
Maximum	3.5 watts

LOUDSPEAKER

Type	5-inch electrodynamic
V-C impedance	5 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A-6	105-125 volts, 60 cycles, 80 watts
Rating A-5	105-125 volts, 50 cycles, 80 watts

PHONOGRAPH	Synchronous (manual starting)
Records	10-inch and 12-inch, 78 r.p.m.
Pickup	Crystal, 80,000 ohms at 1,000 c.p.s.
Average Output of Pickup	1½-volts, at 1,000 c.p.s. across ¼ meg. load

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions	10⅞ inches	15¼ inches	9⅜ inches
Chassis Base	2½ inches	10⅛ inches	4⅝ inches
Over-all Chassis Height	7¼ inches		

Weight	18 pounds (net), 22 pounds (shipping)
Operating Controls	(1) Power Switch—Volume, (2) Radio-Phono-Tone Control, (3) Tuning
Tuning Drive Ratio	6 to 1

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Precautionary Lead Dress

1. Dress power leads to phono motor switch away from the audio wiring.
2. Dress power cord and motor cable to end of chassis (free from volume control wiring).
3. Dress pilot lamp lead away from 6Q7G grid.
4. Capacitors C13 and C15 (located at volume control) must be dressed at right angles to each other and as far apart as possible.

Model U-111

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PHONOGRAPH MOTOR SERVICE DATA

The synchronous motor used in this instrument is designed to be simple and foolproof. Among its many features are constancy of speed, low power consumption, single moving part, ease of starting, rubber damper, ease of repair, and long life. The parts that may require attention are plainly shown in figure 1. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

Removing Rotor. — The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

Rotor Adjustment.—Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Lubrication.—Oiling points are indicated in figure 1.

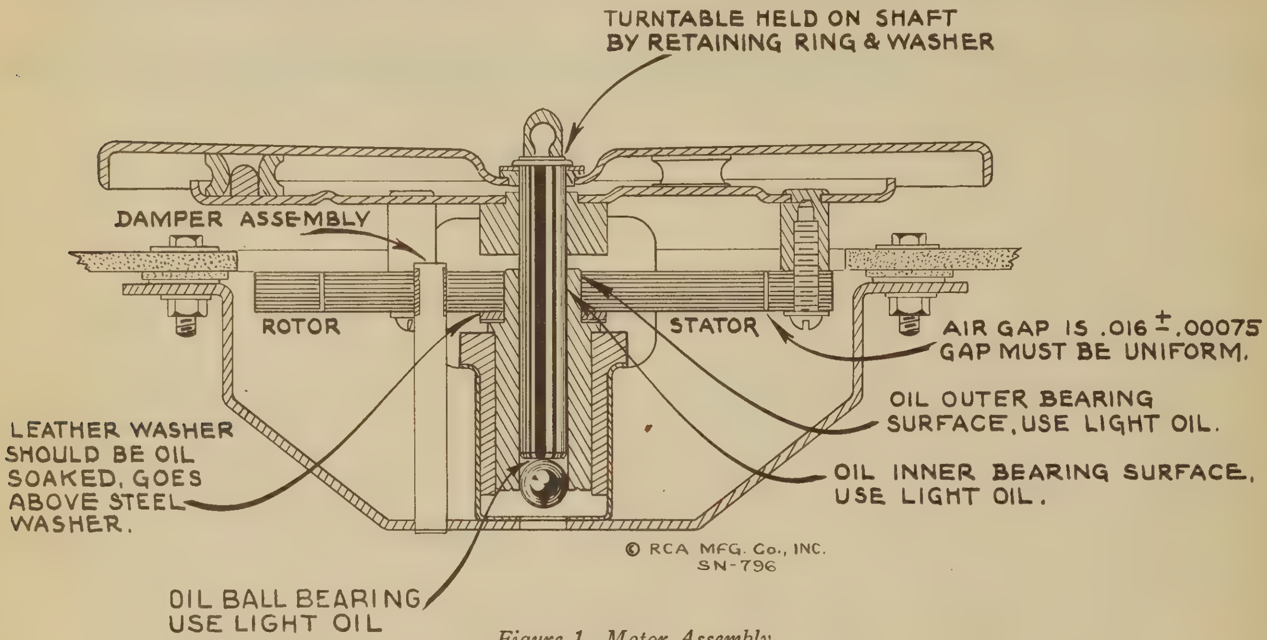

TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
© RCA MFG. Co., INC. SN-796
OIL BALL BEARING USE LIGHT OIL

Figure 1—Motor Assembly

Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output meter alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

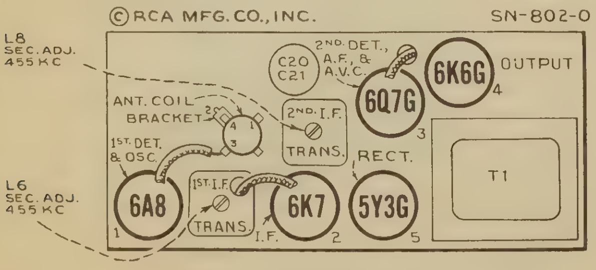


Figure 2—Radiotron and Trimmer Locations

Pre-setting dial.—With gang condenser in full mesh, move dial pointer to coincide with horizontal lines. This is a friction adjustment.

Re-sealing I.F. Adjustment Screws.—After completion of alignment, seal the I.F. magnetite-core adjustment screws with a few drops of household cement.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Transformer)
No. 2	6A8 1st-det. grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Transformer)
No. 3	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C18* (osc.) C3 (antenna)

* Trimmer C17 on gang condenser should be screwed clockwise for maximum capacity before adjusting C18.

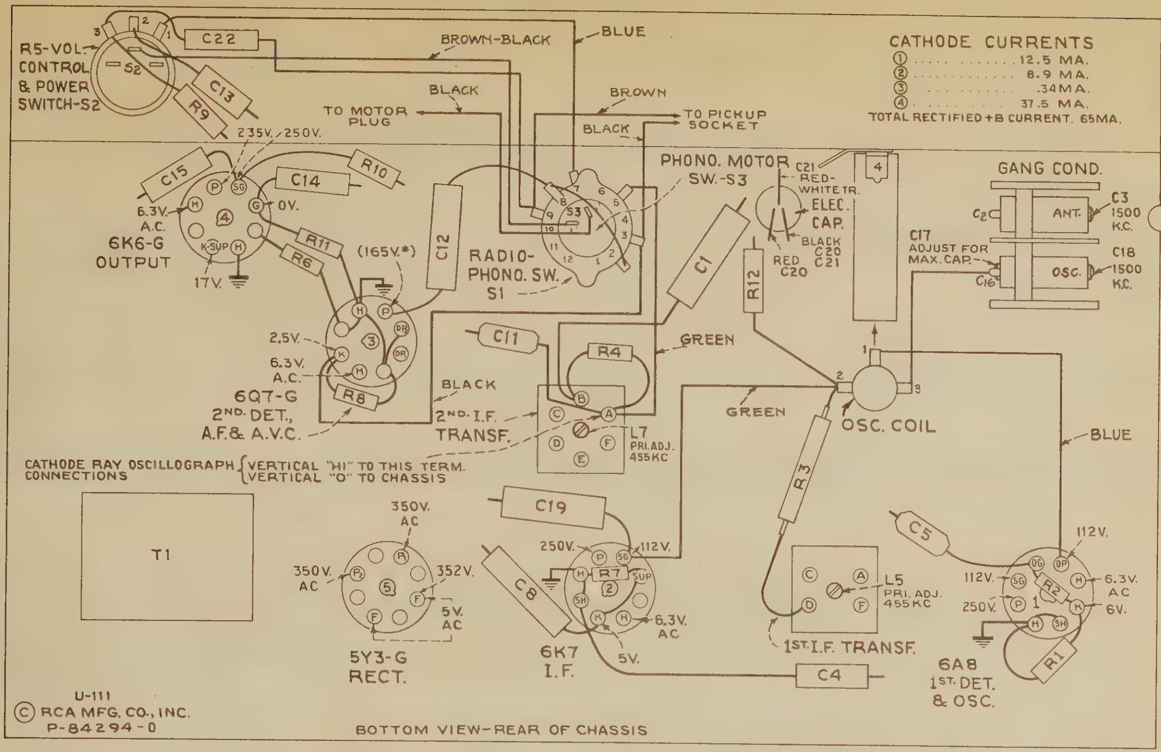


Figure 3—Radiotron Socket Voltages and Location of Parts

*** Note:** Values with star (*) are operating voltages.
Values not starred are actual **measured** voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

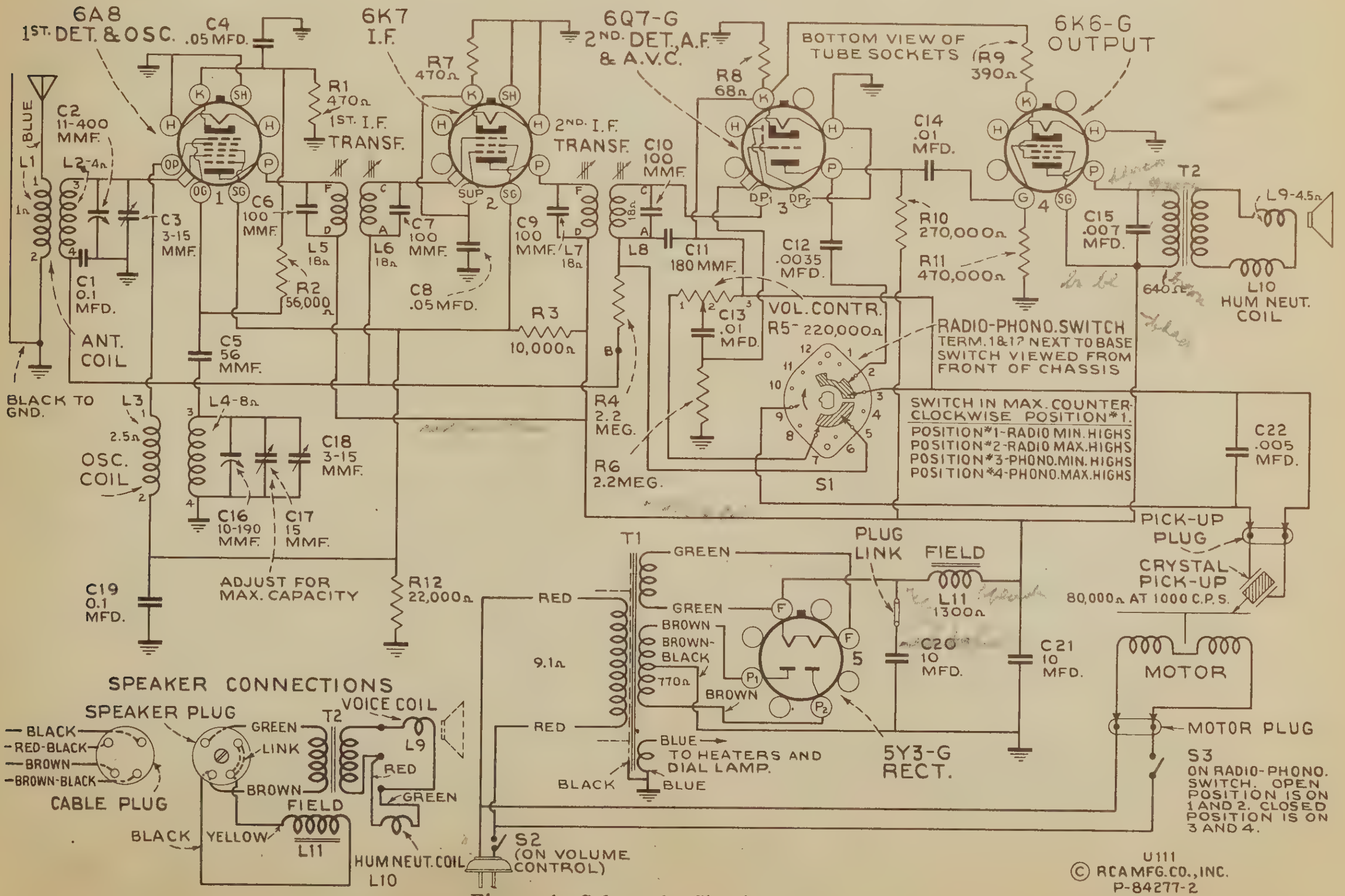


Figure 4—Schematic Circuit Diagram

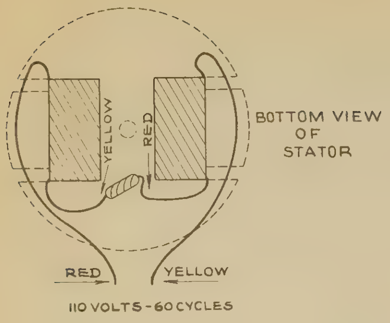


Figure 5—Motor Coil Assembly and Connections
D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms.

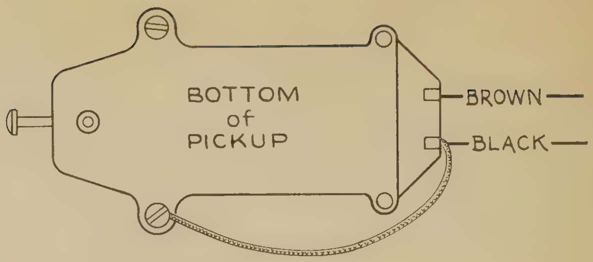


Figure 6—Pickup Connections

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
4287	Body—Pickup cable connector body..........	
31077	Bracket—Dial bracket, and indicator shaft and bearing assembly........................	
4286	Bushing—Pickup cable connector bushing and ferrule insert..........................	
11350	Cap—Grid connector cap..................	
12723	Capacitor—56 mmfd. (C5)................	
30904	Capacitor—100 mmfd. (C6, C7, C9, C10).....	
13003	Capacitor—180 mmfd. (C11)..............	
30303	Capacitor—.0035 mfd. (C12)..............	
4838	Capacitor—.005 mfd. (C22)...............	
5148	Capacitor—.007 mfd. (C15)...............	
14393	Capacitor—.01 mfd. (C13, C14)...........	
30882	Capacitor—.05 mfd. (C4, C8)..............	
30899	Capacitor—0.1 mfd. (C1, C19)............	
31099	Capacitor—Comprising 2 sections each 10 mfd. (C20, C21)..........................	
30894	Coil—Antenna coil (L1, L2)...............	
31098	Coil—Oscillator coil (L3, L4).............	
31097	Condenser—2-gang variable tuning condenser (C2, C3, C16, C17, C18)................	
30877	Cord—Indicator drive cord................	
30905	Core—Adjustable core for i-f transformers	
31078	Dial—Station selector dial scale and holder....	
30896	Indicator—Station selector indicator pointer...	
11891	Lamp—Dial lamp.........................	
14281	Resistor—68 ohms, ¼ watt (R8)............	
30539	Resistor—390 ohms, 1 watt (R9)...........	
30546	Resistor—470 ohms, ¼ watt (R1, R7)........	
31106	Resistor—10,000 ohms, wire wound, 3 watt (R3)	
30736	Resistor—22,000 ohms, 1 watt (R12)........	
12286	Resistor—56,000 ohms, ¼ watt (R2).........	
12199	Resistor—270,000 ohms, ¼ watt (R10).......	
12285	Resistor—470,000 ohms, ¼ watt (R11).......	
12679	Resistor—2.2 meg., ¼ watt (R4, R6)........	
30868	Socket—2-contact female socket for motor power cable	
5040	Socket—4-contact female socket for speaker cable	
31364	Socket—Dial lamp socket assembly...........	
11196	Socket—Radiotron socket..................	
30631	Spring—Indicator drive cord tension spring...	
4284	Spring—Pickup cable connector spring........	
31096	Switch—Radio-record switch (S1, S3)........	
30902	Transformer—First i-f transformer (L5, L6, C6, C7)	
30903	Transformer—Second i-f transformer (L7, L8, C9, C10).............................	
30891	Volume Control and power switch (R5, S2)...	
4285	Washer—Pickup cable connector insulating washer	

STOCK No.	DESCRIPTION	
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly	
31046	Bearing—Bearing assembly.................	
31041	Cap—Rubber spindle cap..................	
31047	Cushion—Rubber cushion for bearing.........	
31034	Motor—110 volt, 50 cycle—less mounting (M1)	
9841	Motor—110 volt, 60 cycle—complete with mounting (M1)..........................	
31040	Mountings—Turntable top rubber mountings sufficient for one turntable................	
31037	Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation............	
31036	Rotor—Turntable and rotor lamination assembly complete for 60 cycle operation............	
31043	Stator—Stator assembly complete with coils and laminations for 50 cycle operation..........	
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation..........	
31039	**Turntable—Finished turntable top plate only—less rubber mountings (50-60 cycle only)...**	
4083	**Washer—Leather washer...................**	
14231	**Washer—Metal spacing washer..............**	
	PICKUP AND ARM ASSEMBLIES	
31049	Base—Pickup arm pivot shaft and base assembly	
4286	Bushing—Bushing and ferrule insert for connector cap.............................	
4288	Cap—Pickup cable connector cap............	
31050	Crystal—Pickup crystal and needle screw......	
9842	Pickup Crystal and arm complete with mounting—less connector.....................	
12539	Screw—Pickup needle screw................	
	REPRODUCER ASSEMBLIES (Speaker 84265-1)	
31110	Cone—Reproducer cone and voice coil (L9)..	
5039	Plug—4-prong male plug for reproducer......	
31109	Reproducer complete......................	
31111	Transformer—Output transformer (T2).......	
	MISCELLANEOUS ASSEMBLIES	
30901	Crystal—Station selector dial crystal.........	
6113	Foot—Felt foot for cabinet................	
13085	Hinge—Cabinet lid hinge..................	
30863	Knob—Station selector, volume control or radio-record switch knob.....................	
31053	Mounting—Motor mounting screw assembly complete	
31054	Mounting—Pickup arm mounting nuts, washer and rubber spacer......................	
30870	Plug—2contact male plug for motor leads.....	
31079	Screw—Chassis mounting screw and washer...	
30900	Spring—Retaining spring for knob Stock No. 30863	
31164	Support—Cabinet lid support...............	

RCA Victor

MODELS U-112, Late U-111, and Late U-112

Chassis No. RC-341C RC-341M RC-341CM

Five-Tube, Single-Band, A-C, Victrolas

TECHNICAL INFORMATION AND SERVICE DATA

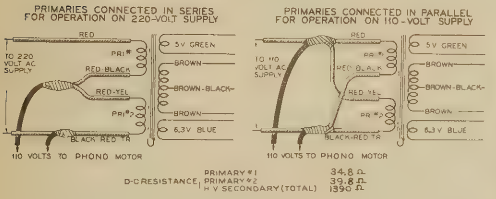
—1938 No. 13A—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Model U-112 is a five-tube superheterodyne table-type Victrola similar to Model U-111, except that the cabinet is enlarged to permit playing 12-inch records with the lid closed. The cabinet dimensions are—Height 11½ inches, Width 15½ inches, Depth 13⅛ inches. The shipping weight is approximately 21 pounds.

The service data for Model U-111 applies to Model U-112, with the following exceptions:

1. The rectifier tube is RCA-5W4 in U-112.
2. A 12,000 ohm resistor (R13) is added in series with C22 across the pickup in Model U-112.
3. Model U-112 is made in three power supply ratings:
   - Rating A-6 .... 105-125 volts, 60 cycles, 80 watts
   - Rating A-5 .... 105-125 volts, 50 cycles, 80 watts
   - Rating B-2 .... 105-125 volts, 25 cycles, 80 watts
4. The 25 cycle power transformer for U-112 has the following d-c resistance:
   - Primary .... 13.7 ohms
   - High-voltage secondary .... 1,190 ohms



Connections for No. 30888 Replacement Transformer

→

Model U-112

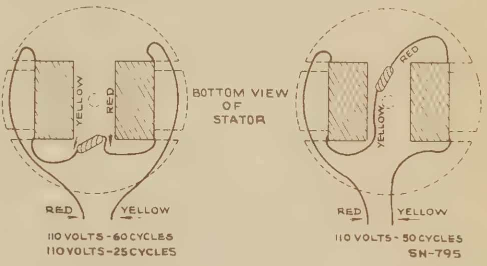
5. The speaker in Model U-112 is marked 84265-4 and has the following d-c resistances:
   - Field coil .... 1,300 ohms
   - Primary of output transformer .... 420 ohms
   - Voice coil .... 2 ohms

Later production of both the U-111 (RC-341M) and U-112 (RC-341CM) incorporate the following changes:

1. The antenna coil is changed from Stock No. 30894 (1 ohm primary) to No. 32338 (35 ohm primary). No. 32338 may be used to replace No. 30894.
2. A 270 mmf. capacitor (C23) is connected from the triode plate of the 6Q7-G to chassis.

The alignment procedure for Model U-112 is the same as for U-111. The following additional alignment data applies to both models:

On r-f alignment, turn the gang condenser to minimum (all the way out of mesh), and with the test-oscillator tuned to 1,720 kc, align the oscillator trimmer C18. Adjust the test-oscillator to 1,500 kc, tune the receiver to the 1,500 kc signal, and align the antenna trimmer C3 for maximum output.



D-C Resistance of each coil is as follows:
110 volts, 50 cycles, and 60 cycles .... 82 ohms
110 volts, 25 cycles .... 250 ohms

The diagram shown above for 50-cycle operation supersedes the diagram published in the U-111 Service Data, and applies to both U-111 and U-112.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES	
12488	Capacitor—270 mmfd. (C23) (Late U-111 and late U-112)	
32338	Coil—Antenna coil (L1 and L2) (Late U-111 and late U-112)	
30128	Resistor—12,000 ohms, ¼ watt (R13) (U-112 only)	
30888	Transformer—Power transformer, 105-125, 200-250 volts, 50-60 cycles	
31445	Transformer—Power transformer, 105-125 volts, 25-60 cycles (U-112)	
	25-CYCLE MOTOR ASSEMBLIES (U-112)	
32077	Motor—110 volts, 25 cycles, less mounting	
32073	Rotor—Turntable and rotor laminations, complete for 25-cycle motor	
32072	Stator—Stator, stator coils, laminations, and weights for 110-volt, 25-cycle motor	
32076	Turntable—Finished turntable top plate for 25-cycle rotor	
32074	Weights—One upper and one lower weight for 25-cycle stator (2 of each required)	
32075	Weight—Lead ring for 25-cycle rotor	
	SPEAKER ASSEMBLIES (U-112) (Speaker 84265-4)	
32503	Cone—Cone for speaker marked 84265-4	
32504	Transformer—Output transformer for speaker marked 84265-4	
5039	Plug—4-prong male plug for reproducer	
	For complete speaker, order Stock No. 31109 (84265-1), Replacement Parts for Stock No. 31109 are listed in Service Data for U-111.	

See U-111 Service Data for all Replacement Parts not listed here.

RCA Victor

MODEL U-115

CHASSIS No. RC-348E

Six-Tube, Electric-Tuning, Single-Band, A-C, Superheterodyne Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 46—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range .... 540-1,720 kc

PUSH BUTTON RANGES:	RC-348E	RC-348E "MOD"	RC-348E "M"
Button No. 1 (left)	550-980 kc	550-980 kc	550-980 kc
Button No. 2	650-1,080 kc	550-980 kc	550-980 kc
Button No. 3	650-1,080 kc	550-980 kc	550-980 kc
Button No. 4	850-1,500 kc	650-1,080 kc	690-1,225 kc
Button No. 5	850-1,500 kc	850-1,500 kc	850-1,500 kc

Intermediate Frequency .... 455 kc

TUBE COMPLEMENT

(1) RCA-6A8-G	First-Det., Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6H6	2nd-Det. and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6K6-G	Power Output
(6) RCA-5Y3-G	Full-Wave Rectifier
Pilot Lamp (1)	Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS

A-6	105-125 volts, 60 cycles, 100 watts
A-5	105-125 volts, 50 cycles, 100 watts
B-2	105-125 volts, 25 cycles, 100 watts
C-6	105-125, 200-250 volts, 60 cycles, 100 watts
C-5	105-125, 200-250 volts, 50 cycles, 100 watts

LOUDSPEAKER (84327-1)

Type	6-inch electrodynamic
Voice-coil Impedance at 400 cycles	2.6 ohms

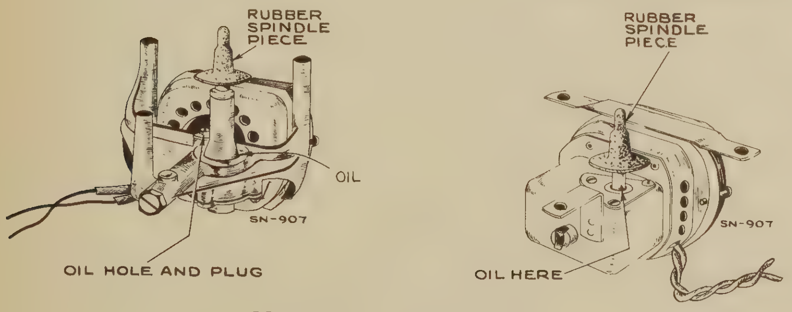
	Height	Width	Depth
Cabinet Dimensions (inches)	14-3/16	16-13/16	13¾
Chassis Base Dimensions (inches)	3	11⅛	5

Over-all Chassis Height .... 9¼ inches

Weight .... 27 lbs. (net) .... 34½ lbs. (shipping)

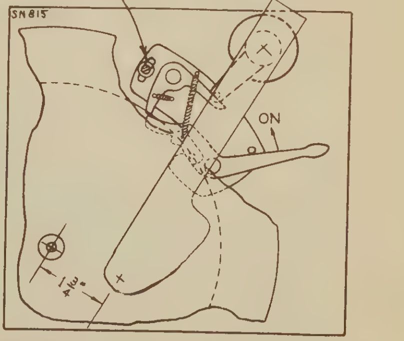
Tuning Drive Ratio .... 6 to 1

Victrola Mechanism



Motors Used in Model U-115
At left, cast-frame type, Drawing No. 84430
At right, drawn-metal type, Drawing No. 84484

ADJUST SWITCH TO TRIP WHEN NEEDLE IS ON 1-3/4" RADIUS FROM ℄ OF MOTOR SPINDLE



The crystal pickup is sealed in a metal case as protection against extreme changes of climate. If failure occurs, do not attempt to repair the unit, but install a new crystal unit.

The phonograph motor is a self-starting constant-speed induction type. Two styles of motor are employed: One style (drawing No. 84430) has a cast frame and mounts from below the motorboard. The other style (drawing No. 84484) has a drawn metal case, and mounts from top of motorboard through a cutout. The two types are shown in the accompanying illustrations.

Motor Lubrication.—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The automatic stop should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center line of the spindle.

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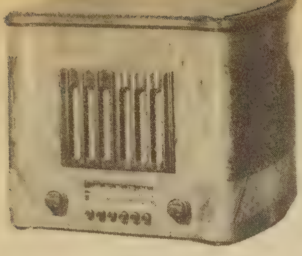
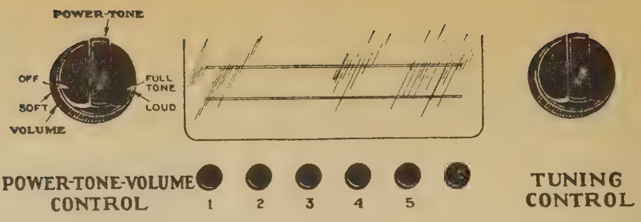


Front View, and Location of Controls



Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

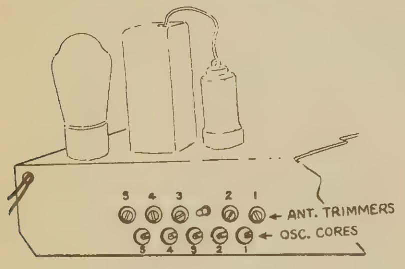
After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark.	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

*** The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.**



Push-Button Adjustments

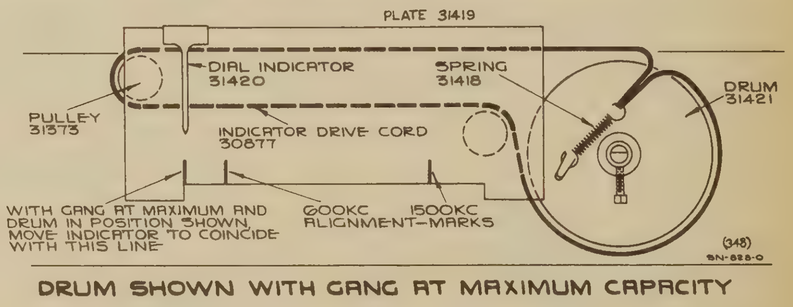


PLATE 31419
DIAL INDICATOR 31420
SPRING 31418
DRUM 31421
PULLEY 31373
INDICATOR DRIVE CORD 30877
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN, MOVE INDICATOR TO COINCIDE WITH THIS LINE
600KC 1500KC ALIGNMENT-MARKS
(348)
SN-828-0
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial-Indicator and Drive Mechanism

Adjustments for Electric Tuning

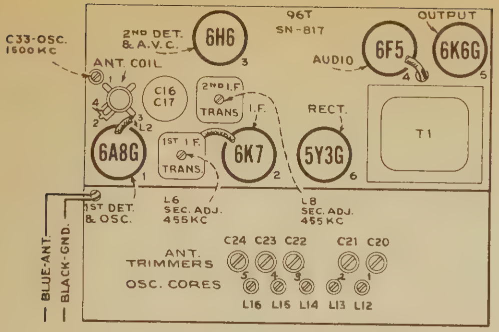
These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

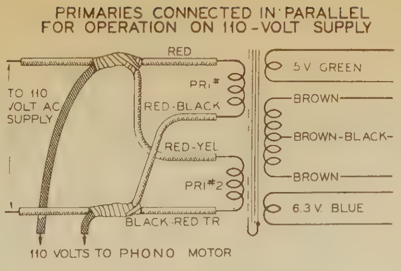
The procedure is as follows:

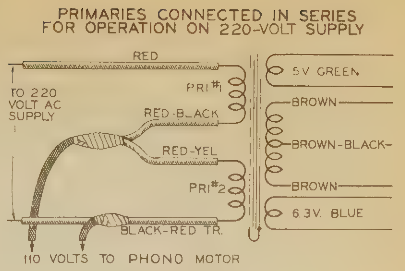
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores using one or two feet of wire as an antenna.

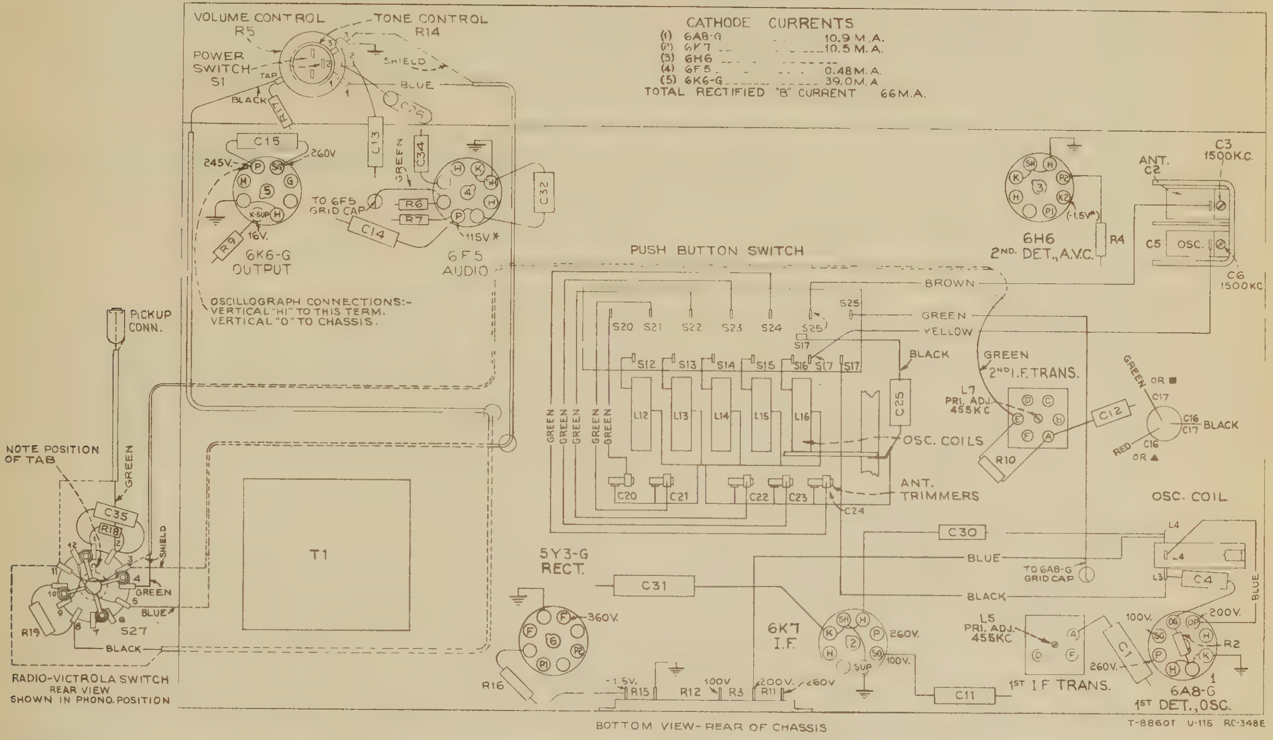






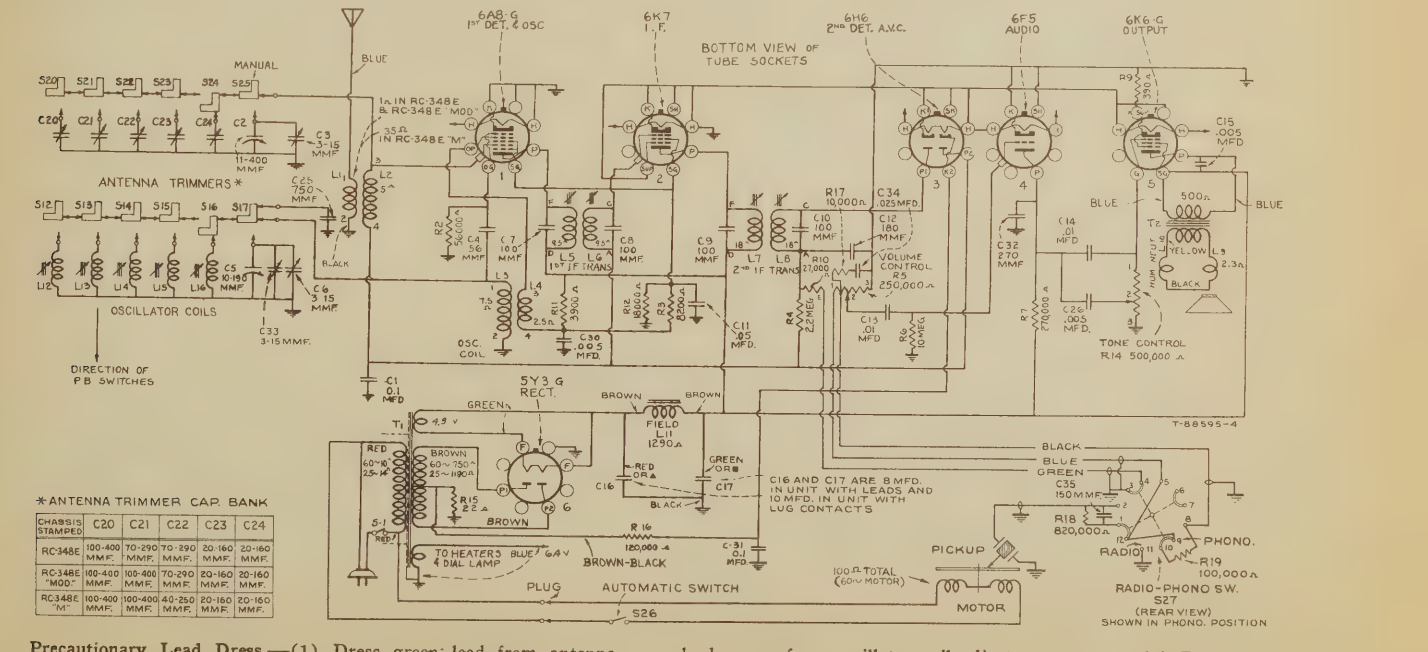
D-C RESISTANCE

PRIMARY #1	13Ω
PRIMARY #2	16Ω
H.V. SECONDARY (TOTAL)	550Ω



Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



*ANTENNA TRIMMER CAP. BANK

CHASSIS STAMPED	C20	C21	C22	C23	C24
RC-348E	100-400 MMF.	70-290 MMF.	70-290 MMF.	20-160 MMF.	20-160 MMF.
RC-348E "MOD."	100-400 MMF.	100-400 MMF.	70-290 MMF.	20-160 MMF.	20-160 MMF.
RC-348E "M"	100-400 MMF.	100-400 MMF.	40-250 MMF.	20-160 MMF.	20-160 MMF.

Precautionary Lead Dress.—(1) Dress green lead from antenna coil to switch away from the chassis and gang. (2) Dress lead from 2nd I.F. transformer to volume control away from other leads. (3) Ground bus from 6H6 socket must be close to chassis. (4) Dress leads away from oscillator coil adjustment screws. (5) Dress power transformer primary leads toward left-hand end of chassis. (6) Dress plate lead to output transformer close to chassis.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES (RC-348E)	
32136	Cable—Shielded cable and female plug for phonograph input	
12723	Capacitor—56 mmfd. (C4)	
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	
12725	Capacitor—150 mmfd. (C35)	
13003	Capacitor—180 mmfd. (C12)	
12488	Capacitor—270 mmfd. (C32)	
31435	Capacitor—750 mmfd. (C25)	
4838	Capacitor—.005 mfd. (C15, C26, C30)	
14393	Capacitor—.01 mfd. (C13, C14)	
4870	Capacitor—.025 mfd. (C34)	
4886	Capacitor—.05 mfd. (C11)	
30899	Capacitor—0.1 mfd. (C1, C31)	
31424	Capacitor—Comprising 2 sections 8 mfd. each (C16, C17) (This type has leads)	
32342	Capacitor—Comprising 2 sections 10 mfd. each (C16, C17) (This type has terminals)	
31382	Clip—Oscillator coil and core mounting clip	
32338	Coil—Antenna coil (L1, L2)	
31098	Coil—Oscillator coil (L3, L4)	
31422	Condenser — 2-gang variable tuning condenser (C2, C3, C5, C6, C33)	
32355	Control — Volume control, tone control and power switch	
30877	Cord—Indicator drive cord	
30905	Core—Adjustable core for i-f transformers	
31386	Core—Adjustable core and stud for oscillator coils	
31421	Drum—Variable condenser drive cord drum	
31420	Indicator—Station selector indicator pointer	
11891	Lamp—Dial lamp	
31419	Plate—Dial color plate	
30868	Plug—2-contact female plug for motor power leads	
31373	Pulley—Indicator drive cord pulley	
31425	Resistor—Voltage divider—comprising one 22-ohm, one 18,000-ohm, one 8,200-ohm and one 3,900-ohm sections (R3, R11, R12, R15)	
31388	Resistor—390 ohms, 1 watt (R9)	
14559	Resistor—10,000 ohms, ¼ watt (R17)	
12738	Resistor—27,000 ohms, ¼ watt (R10)	
12286	Resistor—56,000 ohms, ¼ watt (R2)	
3252	Resistor—100,000 ohms, ½ watt (R19)	
13734	Resistor—120,000 ohms, ¼ watt (R16)	
12199	Resistor—270,000 ohms, ¼ watt (R7)	
30963	Resistor—820,000 ohms, ¼ watt (R18)	
12679	Resistor—2.2 meg., ¼ watt (R4)	
13601	Resistor—10 meg., ¼ watt (R6)	
14887	Retainer—Pulley retainer	
14350	Screw—No. 8-32 square-head set screw for drum, Stock No. 31421	
31364	Socket—Dial lamp socket	
31251	Socket—Tube socket	
31418	Spring—Indicator drive cord tension spring	
31414	Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	
30902	Transformer—First i-f transformer (L5, L6, C7, C8)	
30903	Transformer—Second i-f transformer (L7, L8, C9, C10)	
31574	Transformer—Power transformer, 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer, 100-120 volts, 50-60 cycle (T1)	
31575	Transformer—Power transformer, 100-120 and 200-240 volts, 50-60 cycle (T1)	
	MOTOR ASSEMBLIES *	
	(Motor No. 84430)	
32176	Bearing—Rotor thrust bearing screw and nut	
32175	Field—Motor field coils and laminations	
32135	Motor—105-125 volts, 60 cycle	
32177	Shaft—Turntable spindle shaft and fibre gear	
	(Motor No. 84484-2, 3, or 4)	
32336	Field—Motor field coils and laminations, 110 volts, 60 cycle (For Motor 84484-2)	
32650	Field—Motor field coils and laminations, 110 volts, 50 cycle (For Motor 84484-3)	
32652	Field—Motor field coils and laminations, 110 volts, 25 cycle (For Motor 84484-4)	
32558	Motor—105-125 volts, 60 cycle (84484-2)	
32637	Motor—105-125 volts, 50 cycle (84484-3)	
32638	Motor—105-125 volts, 25 cycle (84484-4)	
32337	Shaft—Turntable spindle shaft and fibre gear—60 cycle (For Motor 84484-2)	
32651	Shaft—Turntable spindle shaft and fibre gear—50 cycle	
32653	Shaft—Turntable spindle shaft and fibre gear—25 cycle	
	PICKUP AND ARM ASSEMBLIES	
31212	Base—Pickup arm pivot shaft, trip lever, and mounting base assembly	
32138	Cable—Shielded cable and male plug for pick-up arm	
31050	Crystal—Pickup crystal and needle screw	
32137	Pickup and arm complete	
12539	Screw—Pickup needle screw	
	SPEAKER ASSEMBLIES	
31443	Cone—Speaker cone and voice coil (L9)—for Speaker No. 84327-1	
31663	Speaker complete (No. 84327-1)	
31477	Transformer—Output transformer (T2) (For Speaker No. 84327-1)	
32586	Cone—Speaker cone and voice coil for Speaker No. 84327-3	
32587	Coil—Speaker field coil for Speaker No. 84327-3	
32588	Transformer—Output transformer for Speaker No. 84327-3	
	MISCELLANEOUS ASSEMBLIES	
14803	Brake—Automatic brake complete	
31428	Button—Station selector switch push button	
31487	Clip—Spring clip to hold dial	
31464	Damper—One rubber cap for motor spindle, and one metal damper plate	
31429	Dial—Station selector glass dial	
31095	Disc—10 protective discs for call letter markers.	
31667	Escutcheon—Tuning dial escutcheon	
32140	Hinge—Cabinet lid hinge	
31355	Knob—Station selector or radio-record switch knob (small)	
31391	Knob—Tone control and power switch knob (small)	
30773	Knob—Volume control or station selector knob (large)	
30991	Markers—Push button call letter markers	
31054	Mounting—Pickup arm rubber mounting, washers, and nut	
32139	Mounting—Motor mounting spacers, washers, and screw—sufficient for one motor	
30870	Plug—2-contact male plug for motor leads	
14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob, Stock No. 31391	
30100	Springs—Tension springs for automatic brake—one long and one short	
32141	Support—Cabinet lid support	
14804	Switch—Automatic brake switch (S26)	
12647	Switch—Radio-Record switch (S27)	
31463	Turntable	

* Motor No. 84430 is type that mounts from below motorboard. Motor No. 84484 is type that mounts from top of motorboard through a cutout.

TRIMMER CAPACITOR BANK AND ELECTRIC-TUNING OSCILLATOR COILS

(Refer to Electrical Specifications for frequency ranges)

DESCRIPTION	Chassis Stamped RC-348E		Chassis Stamped RC-348E "MOD"		Chassis Stamped RC-348E "M"	
	Stock No.		Stock No.		Stock No.	
Capacitor—Trimmer capacitor bank (C20, 21, 22, 23, and 24)	31416		32066		32339	
Coil—Oscillator coil (L12)	31415		31415		31415	
Coil—Oscillator coil (L13)	31384		31415		31415	
Coil—Oscillator coil (L14)	31384		31384		32340	
Coil—Oscillator coil (L15)	31383		31383		31383	
Coil—Oscillator coil (L16)	31383		31383		31383	

RCA Victor

MODELS U-119, U-122E, and U-124

Six-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Victrolas

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 27—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES	
"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7 mc
"Short Wave" (C)	7-22 mc

R-F ALIGNMENT FREQUENCIES	
"Short Wave" (C)	20 mc (osc., ant.)
"Medium Wave" (B)	6.1 mc (osc.)
"Standard Broadcast" (A)	1,500 kc (osc.)

Six Electric Tuning Positions .... 550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

RCA TUBE COMPLEMENT	
(1) RCA-6K8	First-Detector—Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second-Detector and A.V.C.
(4) RCA-6F5	Audio Voltage Amplifier
(5) RCA-6F6	Audio Power Amplifier
(6) RCA-5W4	Full-Wave Rectifier

Pilot Lamps (2) .... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATING		Radio Only	Total
A-6	105-125 volts,	60 cycles, 80 watts	105 watts
A	105-125 volts,	50-60 cycles, 80 watts	105 watts
B-2	105-125 volts,	25 cycles, 80 watts	105 watts
C-6	105-130/140-160/195-250 volts,	60 cycles, 80 watts	105 watts
C	105-130/140-160/195-250 volts,	50-60 cycles, 80 watts	105 watts

POWER OUTPUT	U-119	U-122E, U-124
Undistorted	2.0 watts	2.5 watts
Maximum	4.0 watts	4.5 watts

LOUDSPEAKER

Type .... Electrodynamic

Voice-coil Impedance		
84308-2	3 ohms	at 400 cycles
RL-63H-5	2.25 ohms	at 400 cycles
RL-70H-1	2.25 ohms	at 400 cycles

MOTOR	
Type	Self-starting induction
Turntable Speed	78 r.p.m. (adjustable)
Record Diameter	10-inch or 12-inch

PICKUP	
Type	Crystal
Impedance	80,000 ohms at 1,000 cycles
Average Output	1½ volts at 1,000 cycles across 250,000 ohm load

Mechanical Specifications

MODELS	U-119	U-122E	U-124
Height (inches)	16 9/32	24	34
Width (inches)	16 3/16	28 7/16	25¾
Depth (inches)	13 9/16	16¾	16¼
Net Weight (pounds)	31	60	62
Shipping Weight (pounds)	38	71	79

Chassis Base Dimensions	13-in. wide, 6½-in. deep, 2½-in. high
Over-all Chassis Height	6 inches
Tuning Drive Ratio	12 to 1

First Edition **Trademark "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.** **Printed in U. S. A.**

General Description

These Victrola models incorporate a six-tube, three-band, superheterodyne radio receiver, and a turntable with self-starting electric motor, automatic stop, and crystal pickup. A switch short-circuits the pickup when the arm is placed on the pickup rest. Offset mounting of the crystal unit in the pickup arm ensures ideal tracking between the needle and the record grooves. The mechanism accommodates ten-inch or twelve-inch records.

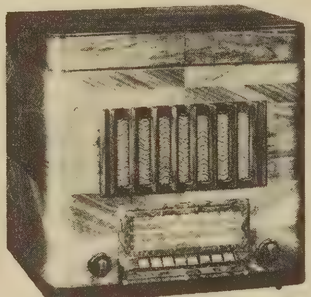
Radio features include: Electric tuning for six stations in the standard-broadcast range; magnetite-core adjusted electric-tuning coils; magnetite-core i-f transformers; temperature-stabilized capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; push-button for Victrola operation; straight-line dial; dust-proof electro-dynamic speaker.

Model U-119 is a six-tube table model, with six-inch speaker.

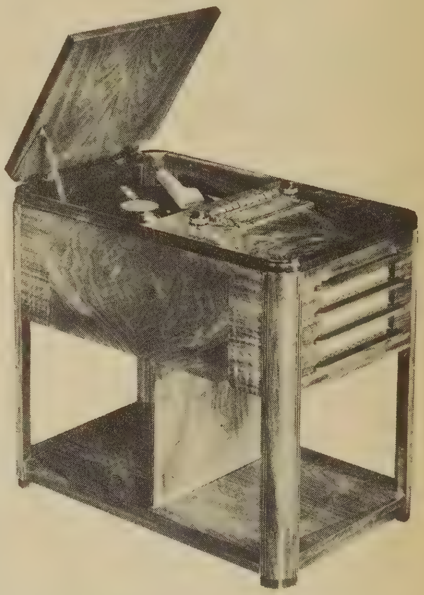
Model U-122E is a six-tube end-table model, with eight-inch speaker.

Model U-124 is a six-tube console model, with twelve-inch speaker.

Model U-124

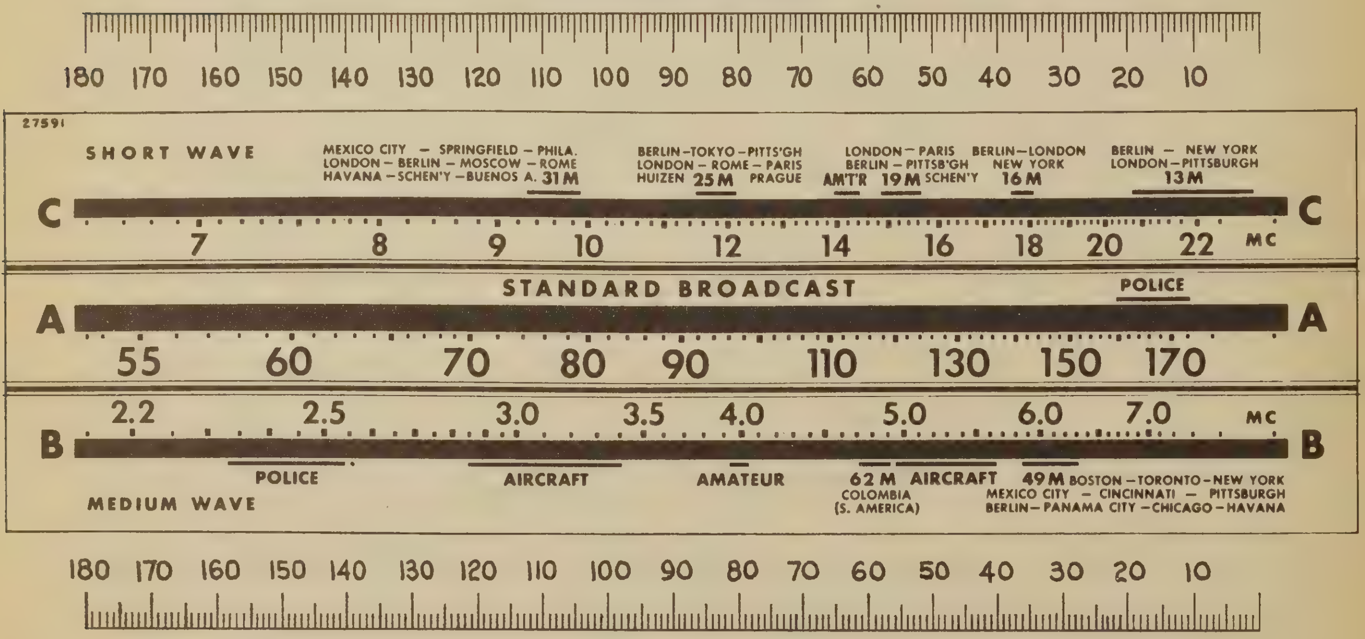


Model U-119



Model U-122E

Calibration Scale



Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 28½° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

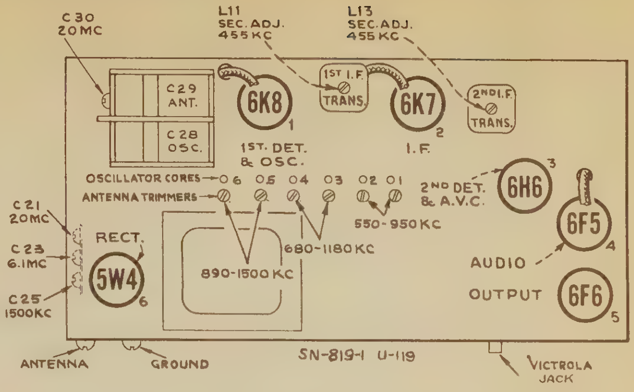
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	20 mc	20 mc (23°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 400 ohms	6.1 mc	6.1 mc (31°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

* Use **minimum** capacity peak if two peaks can be obtained.

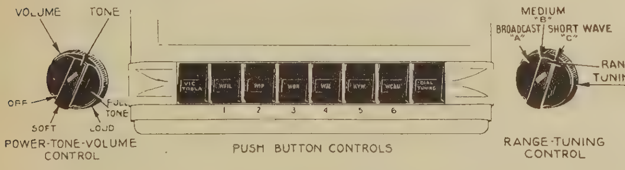
** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by turning to approximately 49° (5.19 mc), at which point a weaker signal should be received.

Note: Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.



Location of Controls

The left-hand push-button is a Victrola switch.

The right-hand push-button is for dial tuning.

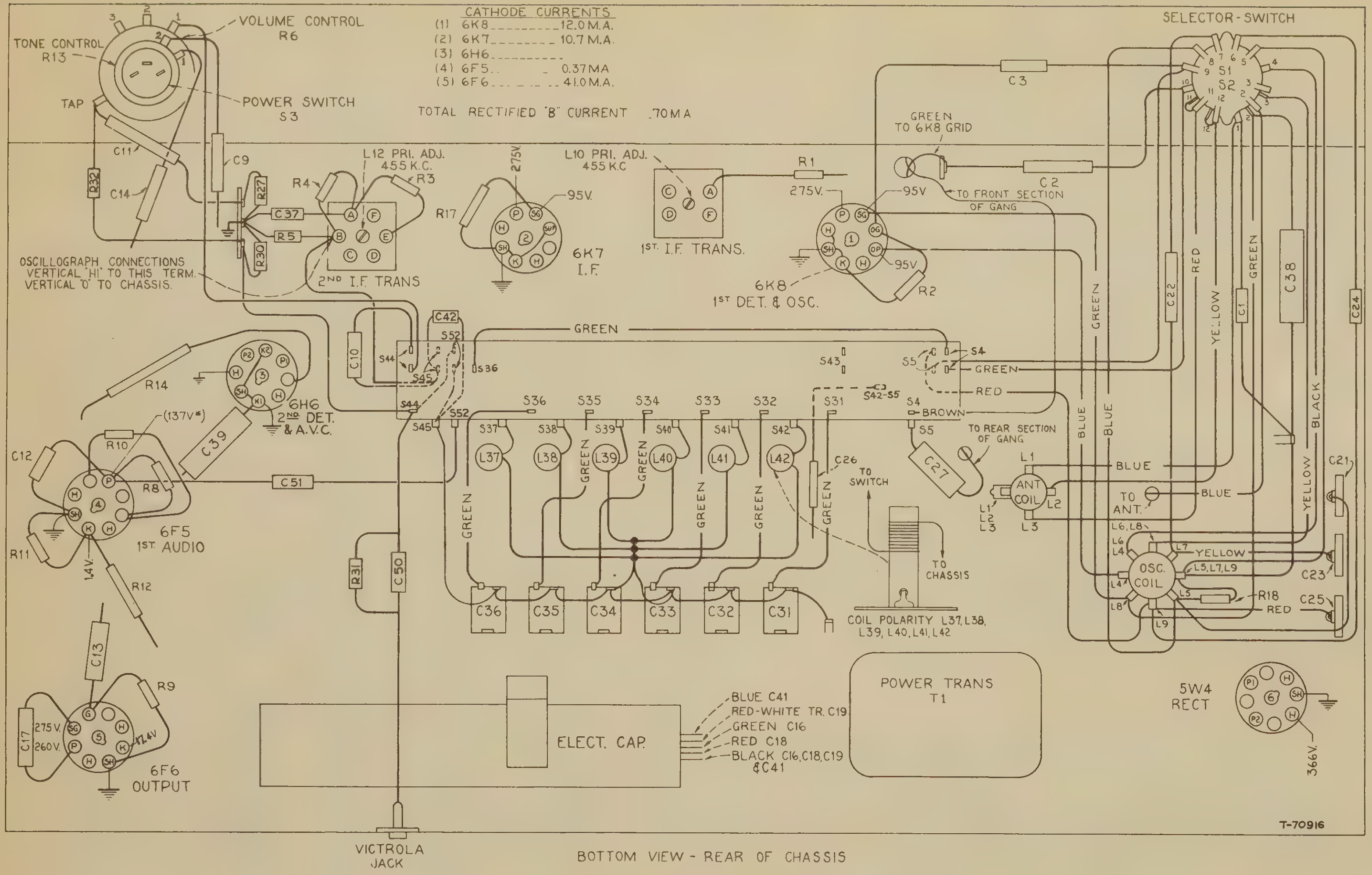
Use one or two feet of wire as an antenna to ensure sharp peaking.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

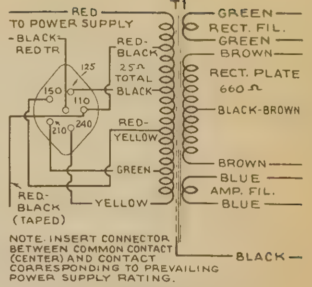


BOTTOM VIEW - REAR OF CHASSIS

R-F Wiring Diagram and Socket Voltages

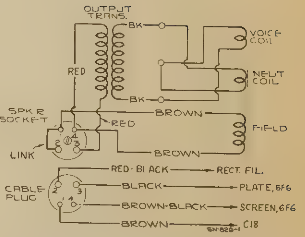
*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

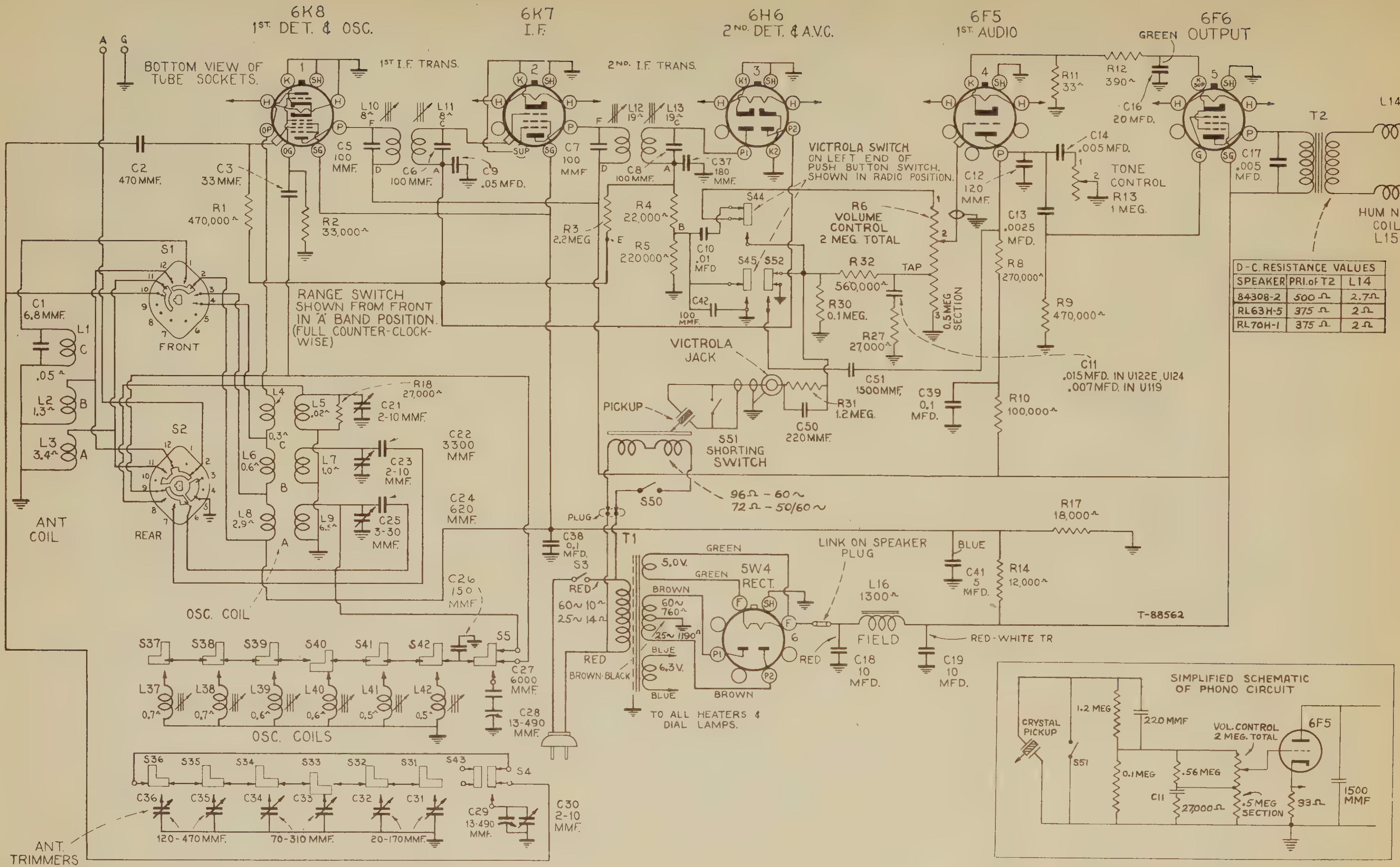


UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections. (110-volt supply for the Victrola motor is obtained by connecting the motor to the red and the red-black leads.)



Above — Connections and Colors of Loudspeaker and Cable.



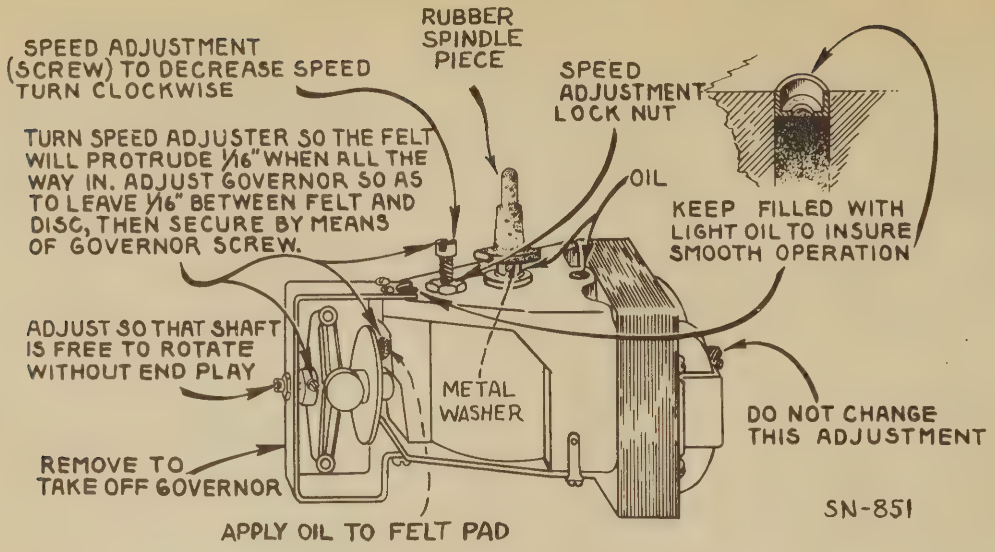
D-C RESISTANCE VALUES		
SPEAKER	PRI. of T2	L14
84308-2	500 Ω	2.7Ω
RL63H-5	375 Ω	2Ω
RL70H-1	375 Ω	2Ω

Schematic Circuit Diagram

Precautionary Lead Dress.—

1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Leads across back of chassis should be dressed under electrolytic to prevent approaching Victrola jack.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.

Victrola Mechanism


SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
RUBBER SPINDLE PIECE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
METAL WASHER
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
APPLY OIL TO FELT PAD
SN-851

Motor Lubrication and Adjustments

The crystal pickup unit is thoroughly sealed in a metal casing as protection against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed.

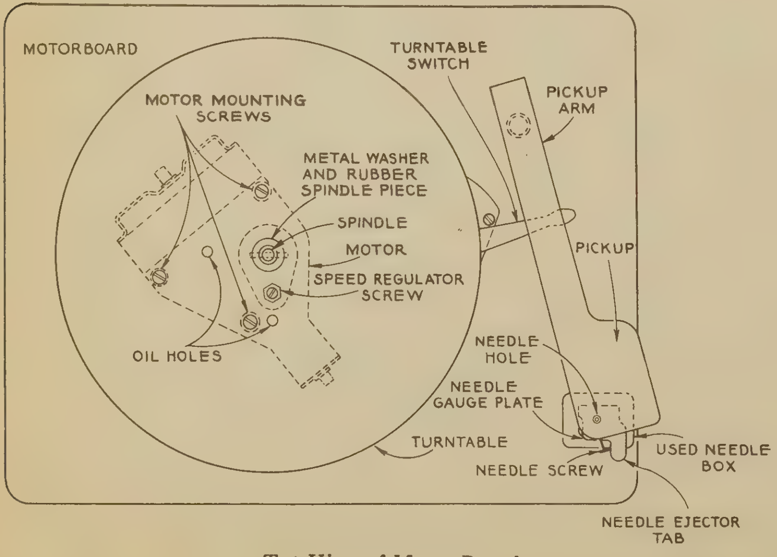
The turntable drive is a self-starting, variable-speed, governor-type induction motor. The motor speed-adjustment screw is located under the turntable, which must be removed for speed adjustment. The motor speed should be 78 r.p.m., and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding beyond the edge of the record, and counting the number of revolutions of the turntable per minute while playing a record.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

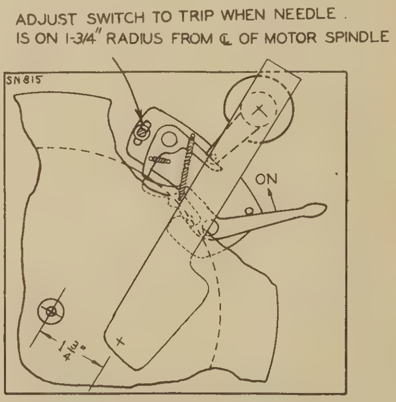
A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

Lubrication and adjustments are described in the accompanying illustrations. Note that the switch lever should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center-line of the spindle.

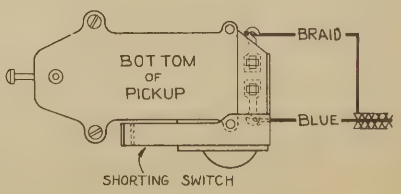
Operation.—*To start* turn on the radio power switch, push in the Victrola push button (left-end button) and push the turntable switch lever toward the base of the pickup arm. *To stop* move the pickup arm toward the spindle, in order to actuate the turntable switch, before returning the arm to the arm rest. Records with the standard eccentric or spiral stopping groove will automatically throw the turntable switch at the end of a record.



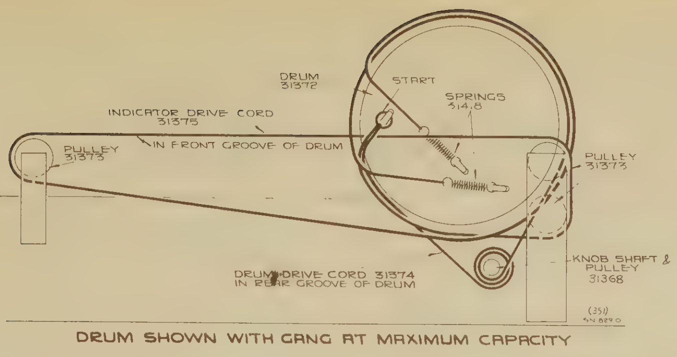
Top View of Motor Board


ADJUST SWITCH TO TRIP WHEN NEEDLE IS ON 1-3/4" RADIUS FROM ℄ OF MOTOR SPINDLE
SN815
ON
1¾"

Adjustment of Automatic Switch



Pickup Connections



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14517	Board—Antenna ground terminal board	
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	
14079	Capacitor—6.8 mmfd. (C1)	
31387	Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C42)	
30904	Capacitor—100 mmfd. (C5, C6, C7, C8)	
12724	Capacitor—120 mmfd. (C12)	
13003	Capacitor—180 mmfd. (C37)	
12694	Capacitor—220 mmfd. (C50)	
30433	Capacitor—470 mmfd. (C2)	
31381	Capacitor—620 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
13762	Capacitor—1,500 mmfd. (C51)	
31403	Capacitor—3,300 mmfd. (C22)	
31405	Capacitor—6,000 mmfd. (C27)	
5107	Capacitor—.0025 mfd. (C13)	
4838	Capacitor—.005 mfd. (C14, C17)	
5148	Capacitor—.007 mfd. (C11) (Model U-119 only)	
14393	Capacitor—.01 mfd. (C10)	
11315	Capacitor—.015 mfd. (C11) (Models U-122E and U-124 only)	
4886	Capacitor—.05 mfd. (C9)	
4839	Capacitor—0.1 mfd. (C38, C39)	
31371	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41)	
31382	Clip—Oscillator coil and core mounting clip	
31402	Coil—Antenna coil—A, B, and C bands (L1, L2, L3)	
31401	Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9)	
31383	Coil—Oscillator coil—A band (L41, L42)	
31384	Coil—Oscillator coil—A band (L39, L40)	
31385	Coil—Oscillator coil—A band (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31375	Cord—Indicator pointer drive cord	
31374	Cord—Variable condenser drum drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, and 31385	
31372	Drum—Variable condenser drive cord drum and calibrator dial	
11891	Lamp—Dial lamp	
30868	Plug—2-contact female plug for motor cable	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Drive cord pulley	
14671	Resistor—33 ohms, ¼ watt (R11)	
31388	Resistor—390 ohms, 1 watt (R12)	
31389	Resistor—12,000 ohms, wire wound, 5 watts (R14)	
30151	Resistor—18,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R7, R18)	
12454	Resistor—33,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10, R30)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R1, R9)	
12486	Resistor—560,000 ohms, ¼ watt (R32)	
30208	Resistor—1.2 meg., ¼ watt (R31)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31418	Spring—Indicator, or drum drive cord tension spring	
31364	Socket—Dial lamp socket	
14278	Socket—Pickup input socket	
31251	Socket—Tube socket	
31398	Switch—Range switch (S1, S2)	
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S44, S45, S52)	
30957	Transformer—First i-f transformer (L10, L11, C5, C6)	
30903	Transformer—Second i-f transformer (L12, L13, C7, C8)	
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	
31446	Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1)	
	MOTOR ASSEMBLIES	
31617	Bracket—Motor governor end bearing bracket—less bearing screw, and nut	
31618	Field—Motor field coils and laminations—105-125 volts, 60 cycle	
31619	Field—Motor field coils and laminations—105-125 volts, 50-60 cycle	
31626	Field—Motor field coils and laminations—105-125 volts, 25 cycle	
31623	Governor—Motor governor complete—60 cycle	
11703	Governor—Motor governor complete—50-60 cycle	
31624	Governor—Motor governor complete—25 cycle	
31724	Motor—105-125 volts, 25 cycle (M1)	
31462	Motor—105-125 volts, 50-60 cycle (M1)	
31461	Motor—105-125 volts, 60 cycle (M1)	
31616	Screw—Motor rotor bearing screw and nut	
31620	Screw—Motor speed regulator screw and nut	
31621	Shaft—Motor turntable spindle shaft and gear—60 cycle or 50-60 cycle	
31773	Shaft—Motor turntable spindle shaft and gear—25 cycle	
31622	Washer—Motor spindle shaft thrust bearing washers (1 metal, 1 felt)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
	MOTOR BOARD ASSEMBLIES	
9848	Cup—Used needle cup and lid complete	
31464	Damper—One rubber spindle cap and one metal damper plate	
31465	Mounting—Pickup arm base mounting — one rubber washer, one lockwasher, one nut	
30870	Plug—2-contact male plug for motor and switch leads	
31158	Screw—Motor mounting screws, washers, and spacers, (sufficient for one motor)	
31155	Spring—Used needle cup lid spring	
30100	Spring—Auto. switch springs—one long spring and one short spring	
31466	Switch—Automatic motor switch and switch lever	
31467	Switch—Switch only—for auto. switch (S50)	
31463	Turntable	
	PICKUP AND ARM ASSEMBLIES	
31156	Crystal—Pickup crystal cartridge and needle screw and shorting switch (S51)	
31468	Pickup and Arm complete	
31160	Screw—Needle screw	
31469	Shaft—Pickup pivot arm and shaft assembly complete with base	
	SPEAKER ASSEMBLIES Model U-119 (Speaker No. 84308-2)	
31762	Cone—Speaker cone and voice coil (L14)	
31761	Speaker Complete	
31444	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES Model U-122E (Speaker No. RL63H-5)	
14356	Board—3-contact speaker terminal board	
13866	Cap—Cone center dust cap	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31310	Cone—Speaker cone and voice coil (L14)	
31302	Plug—4-contact male plug for speaker	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
31453	Speaker Complete	
14355	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	SPEAKER ASSEMBLIES Model U-124 (Speaker No. RL70H-1)	
13866	Cap—Dust cap for cone center	
12012	Coil—Field coil (L16)	
11469	Coil—Hum neutralizing coil (L15)	
31275	Cone—Speaker cone and voice coil (L14)	
31302	Plug—4-contact male plug	
31592	Speaker—Speaker complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
14355	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push-button	
31456	Cover—8 protective covers for push-button markers	
31591	Dial—Station selector dial scale—Model U-124 only	
31406	Dial—Station selector dial scale—Models U-119 and U-122E only	
31395	Escutcheon—Tuning dial escutcheon only less push-buttons and dial scale	
13085	Hinge—Cabinet lid hinge—Model U-119 only	
30698	Hinge—Cabinet lid hinge—Model U-124 only	
31103	Hinge—Cabinet lid hinge—Model U-122E only	
31392	Indicator—Indicator pointer, carriage, and clip	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31458	Marker—"Dial Tuning" marker for push-button —Models U-119 and U-122E only	
31460	Marker—"Dial Tuning" marker for push-button —Model U-124 only	
31457	Marker—"Record Player" marker for push-button—Models U-119 and U-122E only	
31459	Marker—"Record Player" marker for push-button—Model U-124 only	
31589	Marker—Station call letter markers — Models U-119 and U-122E	
31590	Marker—Station call letter markers — Model U-124	
31393	Screen—Dial color screen	
11210	Screw—Chassis mounting screws, washers, and lockwashers—Model U-124 only	
31390	Screw—Chassis mounting screws, washers, and lockwashers—Model U-119 only	
31471	Screw—Chassis mounting screws, washers, and lockwashers—Model U-122E only	
31470	Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 reqd.)	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob Stock No. 31391	
31164	Support—Cabinet lid support—Model U-119 only	
30946	Support—Cabinet lid support — Model U-122E only	
11831	Support—Cabinet lid support—Model U-124 only	

RCA Victor

40th ANNIVERSARY MODEL U-125

Chassis No. RC-386

Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Victrola

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 36—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7 mc
"Short Wave" (C)	7-22 mc

R-F Alignment Frequencies

"Short Wave" (C)	20 mc (osc., ant.)
"Medium Wave" (B)	6 mc (osc.)
"Standard Broadcast" (A)	1,500 kc (osc.)

Six Electric Tuning Positions....................550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

Intermediate Frequency....................455 kc

RCA Tube Complement

(1)	RCA-6A8-G	First Detector—Oscillator
(2)	RCA-6K7	Intermediate-Frequency Amplifier
(3)	RCA-6Q7-G	Second Detector, 1st A-F, and A.V.C.
(4)	RCA-6J5	Phase Inverter
(5)	RCA-6K6-G	Power Output
(6)	RCA-6K6-G	Power Output
(7)	RCA-6U5	"Magic Eye" Tuning Indicator
(8)	RCA-5Y3-G	Rectifier

Pilot Lamps (4)....................1 Mazda 44, 6.3 volts, 0.25 amp.; 3 Mazda 47, 6.3 volts, 0.15 amp.

Power Supply Ratings

A-6	105-125 volts,	60 cycles,	115 watts
A	105-125 volts,	50-60 cycles,	115 watts
B-2	105-125 volts,	25 cycles,	115 watts
C-6	100-130/140-160/200-250 volts,	60 cycles,	115 watts
C	100-130/140-160/200-250 volts,	50-60 cycles,	115 watts

Power Output

Undistorted	5 watts
Maximum	5.5 watts

Phonograph

Type	Automatic
Record Capacity	Eight 10-inch or seven 12-inch
Turntable Speed	78 r.p.m., adjustable

Loudspeaker

Type	12-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

Pickup

Type	Crystal
Impedance	100,000 ohms at 1,000 cycles
Average Output	1.5 volts at 1,000 cycles across 500,000 ohm load

Mechanical Specifications

Height	34 inches
Width	30½ inches
Depth	16¾ inches
Net Weight	87 pounds
Shipping Weight	113 pounds
Chassis Base Dimensions	13 in. x 6½ in. x 2½ in.
Over-all Chassis Height	6½ inches
Tuning Drive Ratio	12 to 1

First Edition

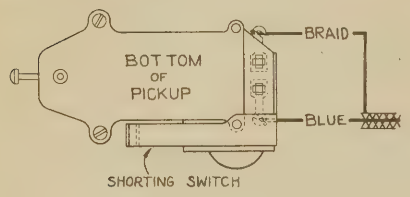
Trademarks "Victrola," "Magic Eye" Reg. U.S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U.S.A.

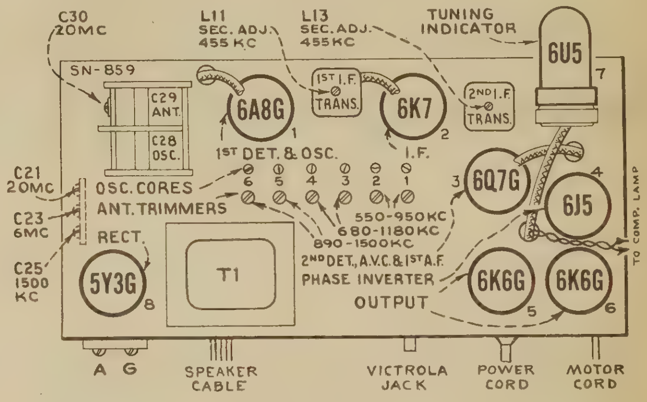
General Description

Model U-125

The Model U-125 incorporates an eight-tube, three-band, superheterodyne radio receiver, and a new, gentle-action Automatic Record Changer. The receiver provides push-button electric tuning for six stations in the "Standard Broadcast" band, and dial tuning on the "Standard Broadcast," "Medium Wave," and "Short Wave" bands. Some of the features include: Magnetite-core electric-tuning coils; magnetite-core i-f transformers; temperature-stabilized oscillator circuit; aural-compensated volume control; continuously variable tone control; and a straight-line dial. The automatic record changer accommodates seven 12-inch or eight 10-inch records. Its features include a feather-touch crystal pickup; self-starting adjustable-speed induction motor with flexible coupling; true-tracking tone arm; top-loading needle socket and automatic needle cup. The output of the pickup is shorted when it is placed on the pickup rest. A twelve-inch dust-proofed dynamic speaker is used, and a "Magic-Eye" tuning tube provides easy tuning.

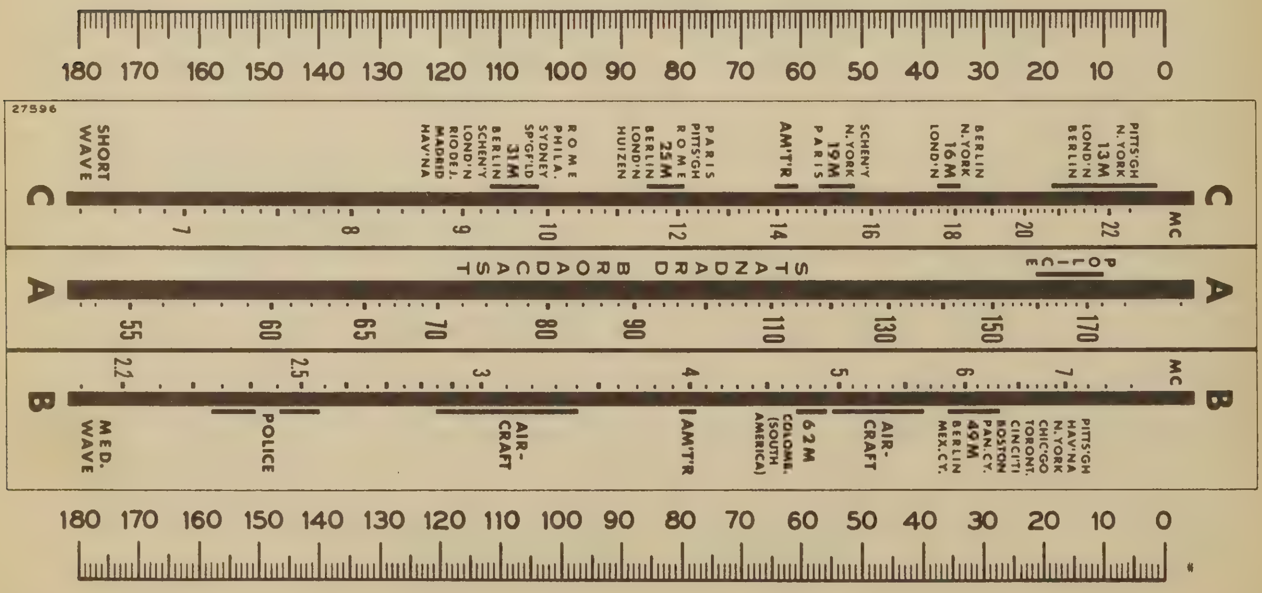


Pickup Connections



Tube and Trimmer Locations

Calibration Scale



The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 28½° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Tuning Dial, and Corresponding 0-180° Calibration Scale

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6A8-G det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 300 ohms	6 mc	6 mc (33°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal (image) should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by tuning to approximately 51° (5.09 mc), at which point a weaker signal (image) should be received.

Note.—Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

This model has eight push-buttons. The front button is the Victrola switch. The rear button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

Use one or two feet of wire as an antenna to ensure sharp peaking.

The procedure is as follows:

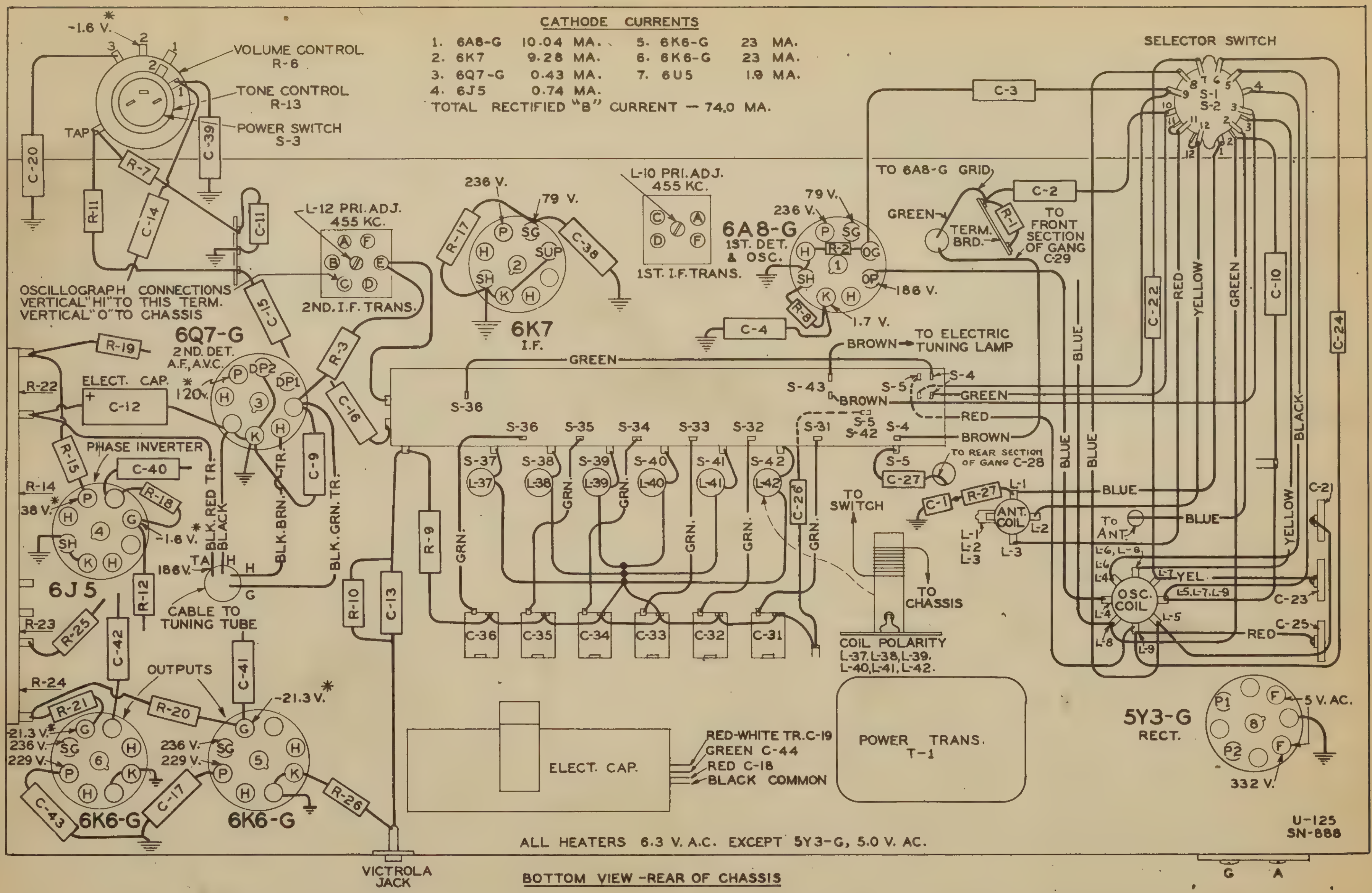
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from front) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Precautionary Lead Dress.—

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.

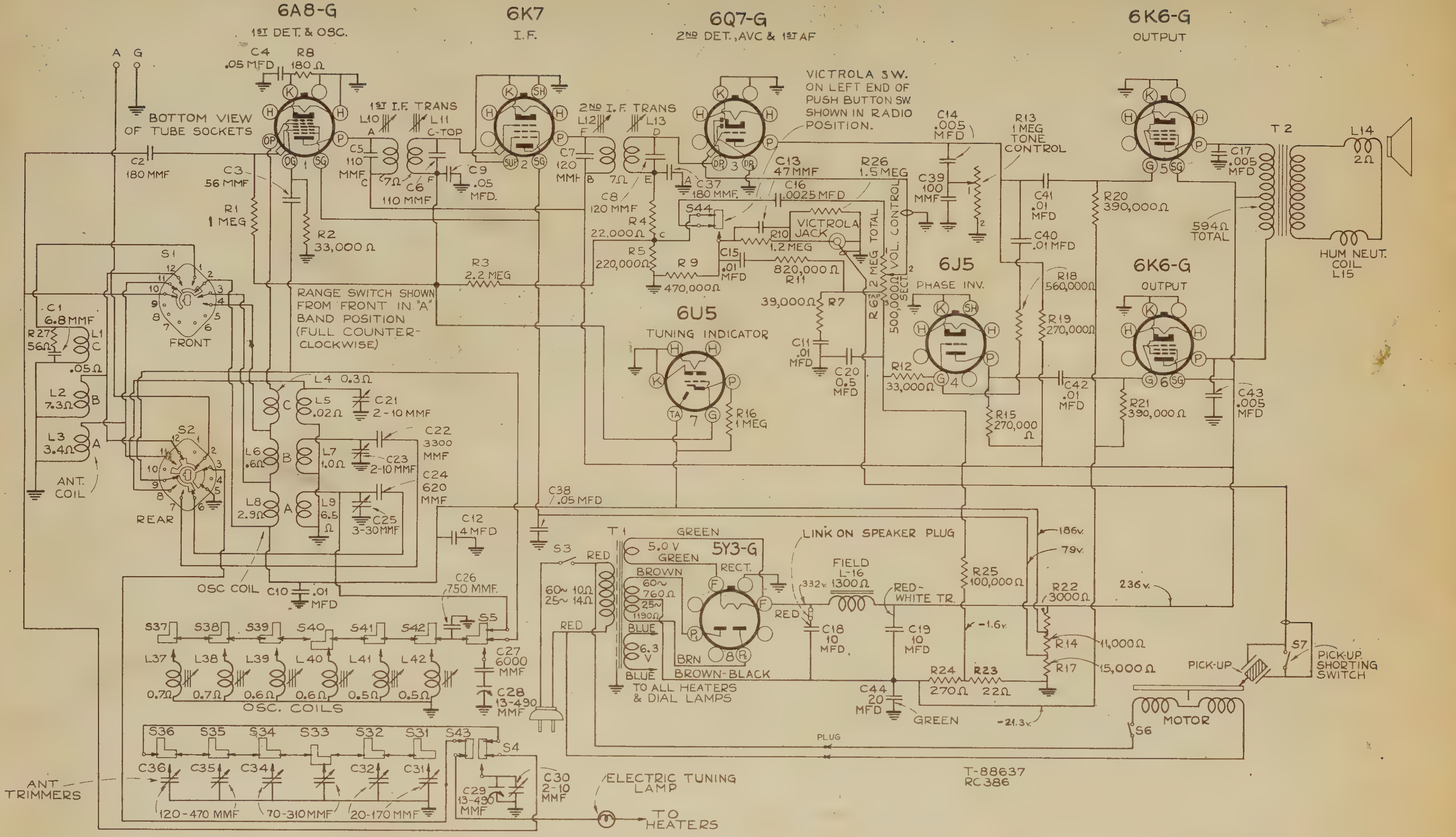


BOTTOM VIEW—REAR OF CHASSIS

* **NOTE.**—Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower, depending on the voltmeter loading.

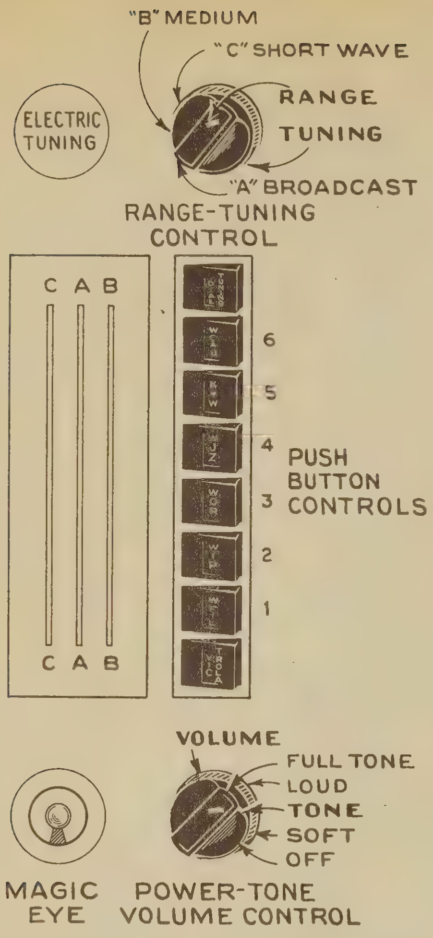
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

R-F Wiring Diagram and Socket Voltages



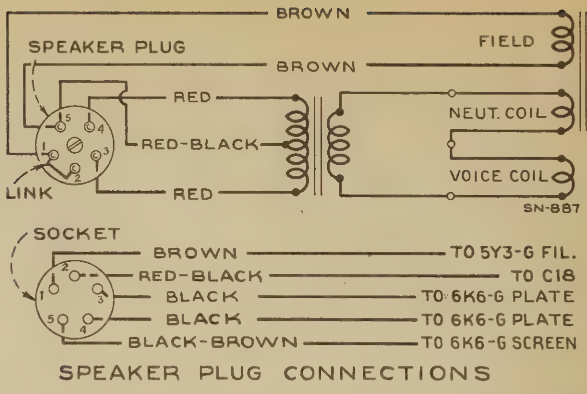
On some models R-26 is 3 megs. For replacement, use 1.5 meg. resistor Stock No. 12201.

Schematic Circuit Diagram



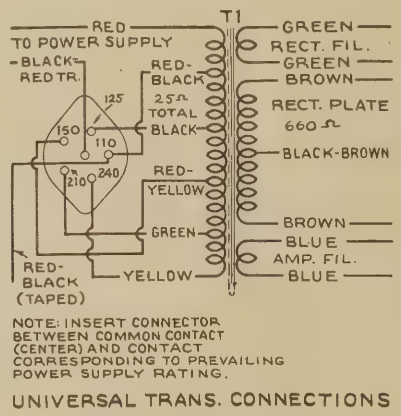
The rear push-button is for dial tuning
The front push-button is the Victrola switch

Location of Controls



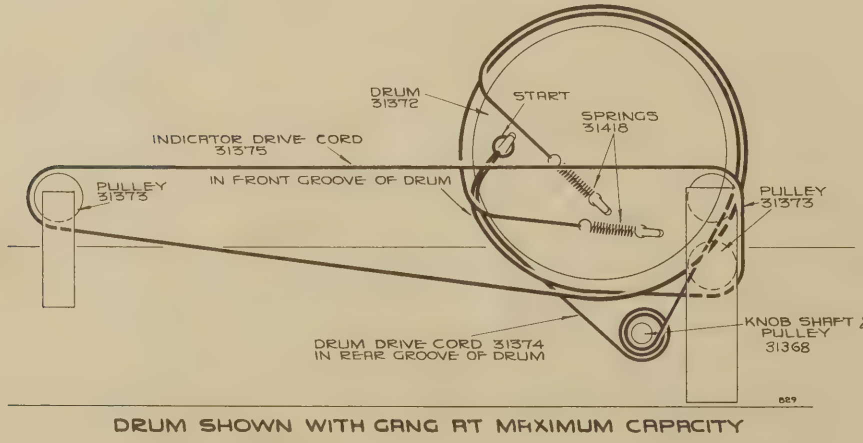
Connections and Colors of Loudspeaker and Cable

Loudspeaker.—The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.



(110-volt supply for the Victrola motor is obtained by connecting the motor to the red and the red-black leads.)

Universal Power Transformer Connections


DRUM 31372
START
SPRINGS 31418
INDICATOR DRIVE CORD 31375
PULLEY 31373
IN FRONT GROOVE OF DRUM
PULLEY 31373
KNOB SHAFT & PULLEY 31368
DRUM DRIVE CORD 31374 IN REAR GROOVE OF DRUM
829
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
14517	Board—Antenna ground terminal board	
30752	Bracket—Magic Eye mounting bracket	
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	
14079	Capacitor—6.8 mmfd. (C1)	
31387	Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36)	
13141	Capacitor—47 mmfd. (C13)	
12723	Capacitor—56 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C39)	
14262	Capacitor—110 mmfd. (C5, C6)	
12404	Capacitor—120 mmfd. (C7, C8)	
13003	Capacitor—180 mmfd. (C2)	
14712	Capacitor—180 mmfd. (C37)	
31381	Capacitor—620 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
4881	Capacitor—3,300 mmfd. (C22)	
31405	Capacitor—6,000 mmfd. (C27)	
5107	Capacitor—.0025 mfd. (C16)	
4838	Capacitor—.005 mfd. (C14, C17, C43)	
4858	Capacitor—.01 mfd. (C10, C40, C41, C42)	
14393	Capacitor—.01 mfd. (C11, C15)	
30882	Capacitor—.05 mfd. (C4, C9, C38)	
30867	Capacitor—0.5 mfd. (C20)	
32145	Capacitor—4 mfd. (C12)	
32142	Capacitor—Comprising two 10 mfd., one 20 mfd. sections (C18, C19, C44)	
31382	Clip—Oscillator coil and core mounting clip	
31402	Coil—Antenna coil—A, B, and C bands (L1, L2, L3)	
31401	Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9)	
31383	Coil—Oscillator coil—A band (L41, L42)	
31384	Coil—Oscillator coil—A band (L39, L40)	
31385	Coil—Oscillator coil—A band (L37, L38)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31375	Cord—Indicator pointer drive cord	
31374	Cord—Variable condenser drum drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud for oscillator coil, Stock Nos, 31383, 31384, and 31385	
31372	Drum—Variable condenser drive cord drum and calibration dial	
11891	Lamp—Phono. compartment lamp	
31480	Lamp—Dial and "Electric Tuning" lamp	
30868	Plug—2-contact female plug for motor cable	
5040	Plug—4-contact female plug for speaker cable	
31373	Pulley—Drive cord pulley	
32143	Resistor—Voltage divider comprising one 11,000-ohm, one 3,000-ohm, one 22-ohm, and one 270-ohm sections (R14, R22, R23, R24)	
13220	Resistor—56 ohms, ¼-watt (R27)	
30545	Resistor—180 ohms, ¼-watt (R8)	
5114	Resistor—15,000 ohms, 1-watt (R17)	
14284	Resistor—22,000 ohms, 1/10-watt (R4)	
12454	Resistor—33,000 ohms, ¼-watt (R2, R12)	
12266	Resistor—39,000 ohms, ¼-watt (R7)	
14560	Resistor—100,000 ohms, ¼-watt (R25)	
11398	Resistor—220,000 ohms, 1/10-watt (R5)	
12199	Resistor—270,000 ohms, ¼-watt (R15, R19)	
13479	Resistor—390,000 ohms, ¼-watt (R20, R21)	
12285	Resistor—470,000 ohms, ¼-watt (R9)	
12486	Resistor—560,000 ohms, ¼-watt (R18)	
30963	Resistor—820,000 ohms, ¼-watt (R11)	
12013	Resistor—1 meg., 1/10-watt (R16)	
13730	Resistor—1 meg., ¼-watt (R1)	
30208	Resistor—1.2 meg., ¼-watt (R10)	
12201	Resistor—1.5 meg., ¼-watt (R26)	
12679	Resistor—2.2 meg., ¼-watt (R3)	
14343	Retainer—Retaining spring for station selector knob shaft	
14887	Retainer—Drive cord pulley retainer	
4669	Screw—No. 8-32 square head set screw for drum, Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
3682	Shield—Tube shield	
30868	Socket—2-contact female socket for motor power cable	
12493	Socket—5-contact female socket for speaker cable	
13871	Socket—Magic Eye socket	
14278	Socket—Pickup input socket	
31251	Socket—Tube socket	
31418	Spring—Indicator or drum drive cord tension spring	
31398	Switch—Range switch (S1, S2)	
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44)	
14376	Transformer—First i-f transformer (L10, L11, C5, C6)	
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	
31445	Transformer—Power transformer 105-125 volts, 25-60 cycles (T1)	
31446	Transformer—Power transformer 100-130/140-160/200-250 volts, 50-60 cycles (T1)	
32144	Transformer—Power transformer 105-125 volts, 50-60 cycles (T1)	
	SPEAKER ASSEMBLIES (RL-70H-5)	
13866	Cap—Dust cap for cone center	
12012	Coil—Field coil (L16)	
11469	Coil—Neutralizing coil (L15)	
31275	Cone—Speaker cone and voice coil (L14)	
31539	Plug—5-contact male plug for speaker	
32146	Speaker complete	
14534	Transformer—Output transformer (T2)	
14357	Washer—Spring washer to hold field coil securely	
	MOTORBOARD ASSEMBLIES	
31149	Base—Tone arm mounting base	
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	
14209	Bumper—Main lever rubber bumper (1)	
9848	Cup—Used needle cup, rest, and lid complete	
31148	Escutcheon—Index escutcheon	
31151	Guide—Pickup lift cable guide (Coil spring, 80T 2-in. large) (2)	
31150	Mounting—Pickup arm base rubber mounting complete	
31155	Spring—Needle cup lid tension spring	
	OPERATING MECHANISM	
31134	Bracket—Pickup locating lever mounting bracket (3)	
31144	Cam—Cam and gear assembly (4)	
6808	Clutch—Trip lever friction clutch assembly (5)	
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	
31129	Cover—Cap for top of record post	
31116	Finger—Trip lever friction finger assembly (7)	
31119	Gear—Long arm and rack gear for front left-hand record post (8)	
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	
31121	Gear—Record post gear (10)	
31123	Guide—Main lever spring guide (11)	
31114	Lever—Index lever assembly (12)	
31137	Lever—Index lever tension spring lever (13)	
31138	Lever—Locating lever and pawl assembly (14)	
31113	Lever—Main lever assembly (15)	
31140	Lever—Pickup lift cable lever and spring assembly (16)	
31135	Lever—Pickup locating lever assembly (17)	
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	
31132	Lever—Trip detaining lever (19)	
31115	Lever—Trip lever assembly (20)	
31131	Lever—Trip regulator lever (21)	
31133	Pawl—Trip pawl assembly (22)	
31124	Pin—Record post drive pin (23)	
14207	Roller—Pickup lift cable roller and bracket assembly (24)	
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	
4563	Screw—Pickup lift cable screw and nuts	
14195	Screw—Set screw for flexible coupling	
31117	Screw—Special screw to adjust friction clutch tension	
31126	Separator—Record separator knife (25)	
31122	Shaft—Record separator post shaft (26)	
31125	Shelf—Record post shelf assembly (27)	
31141	Spindle—Turntable spindle shaft	
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	
31127	Spring—Record separator pressure spring (32) (8 turns, ⅝-in. O.D., ¾-in. lg.)	
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. lg.)	
31142	Spring—Turntable spindle spring	
31147	Strip—Complete set of rubber strips for flexible coupling	
31139	Turntable Assembly—less spindle	
31128	Washers—"C" washer for top of record post	
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	
	MOTOR ASSEMBLIES	
31448	Motor—105-125 volts, 25 cycles (M1)	
31163	Motor—105-125 volts, 50-60 cycles (M1)	
31157	Motor—105-125 volts, 60 cycles (M1)	
30870	Plug—2-contact male plug for motor power cable	
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	
14206	Switch—Motor toggle switch (S6)	
	PICKUP AND ARM ASSEMBLIES	
31162	Cable—Pickup arm lift cable and clips	
31156	Crystal—Pickup crystal cartridge and needle screw	
31159	Pickup and arm complete	
31160	Screw—Pickup needle screw	
31161	Shaft—Pickup pivot arm and shaft assembly	
	MISCELLANEOUS ASSEMBLIES	
12038	Band—Rubber band for Magic Eye	
31397	Button—Station selector push-button	
13103	Cap—Pilot light jewel	
31456	Cover—8-protective covers for push-button markers	
31541	Cushion—Motor plate mounting cushions and clamps sufficient for one instrument	
31591	Dial—Station selector dial scale	
31407	Escutcheon—Magic Eye or Electric Tuning indicator escutcheon	
31395	Escutcheon—Tuning dial escutcheon only, less push-buttons and dial scale	
30698	Hinge—Cabinet lid hinge	
31543	Indicator—Electric Tuning indicator disc	
31392	Indicator—Indicator pointer, carriage, and clip	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31460	Marker—"Dial Tuning" marker for push-button	
31459	Marker—"Victrola" marker for push-button	
31590	Markers—Station call letter markers	
31393	Screen—Dial color screen	
31760	Screen—Phono. compartment lamp screen	
11210	Screw—Chassis mounting screws, washers, and lockwashers	
31470	Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 reqd.)	
4982	Spring—Retaining spring for knob Stock No. 14359	
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob Stock No. 31391	
31478	Support—Cabinet lid support	

RCA Victor

MODELS 8QB and 8QBK

Chassis No. RC-336

Eight-Tube, Three-Band, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)	530-1,720 kc (566-174 m)
Medium Wave ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)	7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY .... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6S7-G	R-F Amplifier
(2) RCA-6D8-G	1st-Detector
(3) RCA-6J7	Oscillator
(4) RCA-6S7-G	1st I-F Amplifier
(5) RCA-6S7-G	2nd I-F Amplifier
(6) RCA-6T7-G	2nd-Det., A.V.C., and Audio
(7) RCA-6L5-G	Driver
(8) RCA-6Z7-G	Push-Pull Power Output

Note: An RCA-5Y3-G rectifier is used in the CV-110 A-C power supply unit.

PILOT LAMPS (2) ..... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Maximum	2.8 watts
Undistorted	2.0 watts

LOUDSPEAKER (Permanent-Magnet Dynamic)

Voice-coil impedance at 400 cycles .... 2.2 ohms

POWER SUPPLY RATING

D-C Rating (with vibrator-type power supply unit)—
6.3 volts, 3.5 amps.

A-C Rating (with CV-110 A-C power supply unit)—
105-117, 117-130, 140-160, 200-225, 225-250 volts, 25-60 cycles.

Mechanical Specifications

Cabinet Dimensions (inches)	Height	Width	Depth
Model 8QB	20⅜	17	11-9/16
Model 8QBK	35	32	12-7/16
Chassis-Base Dimensions (inches)	2½	12	8

Over-all Chassis Height .... 7⅝ inches

Net Weight .... 38 lbs. (8QB) .... 60 lbs. (8QBK)

Tuning Drive Ratio .... 10 to 1, and 50 to 1

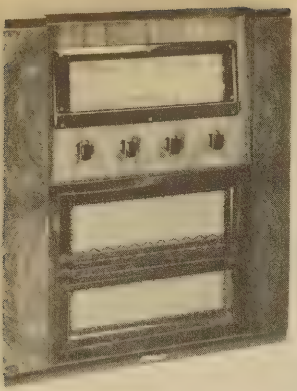
General Description

These receivers employ an eight-tube, three-band, "Magic Brain" superheterodyne chassis. 8QB is a table model, with eight-inch loudspeaker. 8QBK is a console model, with twelve-inch loudspeaker. The loudspeakers are permanent-magnet dynamic type.

The power supply is built as a separate unit. Two different types of units are available to permit operation on either a 6-volt storage battery, or on 105-250 volt, 25-60 cycle a-c power supply.

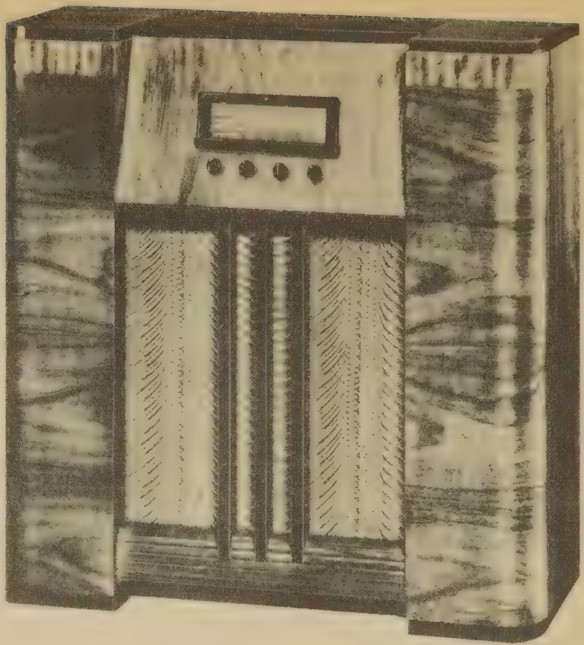
Features of design include: One stage of r-f, and two stages of i-f amplification; magnetite-core i-f transformers; magnetite-core "A" band oscillator coil; air-core trimmer capacitors; automatic volume control; compensated manual volume control; continuously-variable high-frequency tone control; sensitivity switch; pilot-light switch to reduce drain on battery; straight-line dial; two-speed vernier tuning; dust-proof permanent-magnet dynamic speaker; terminals for Victrola Attachment (record player).

First Edition
Trademarks "Victrola," "Radiotron," "Magic Brain," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.
Printed in U.S.A.

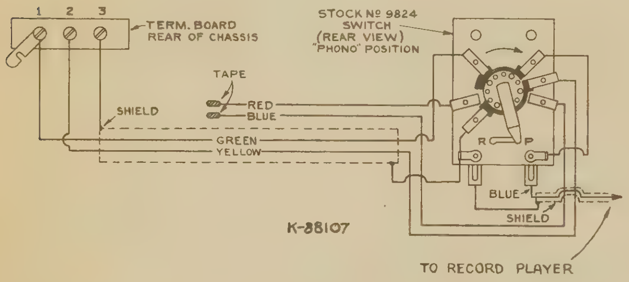


← Model 8QB

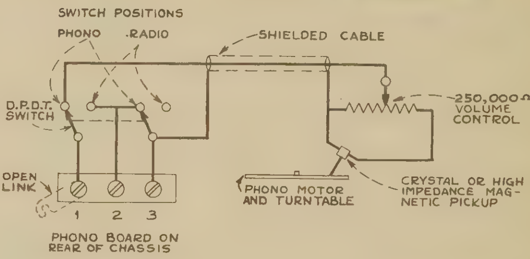
→ Model 8QBK



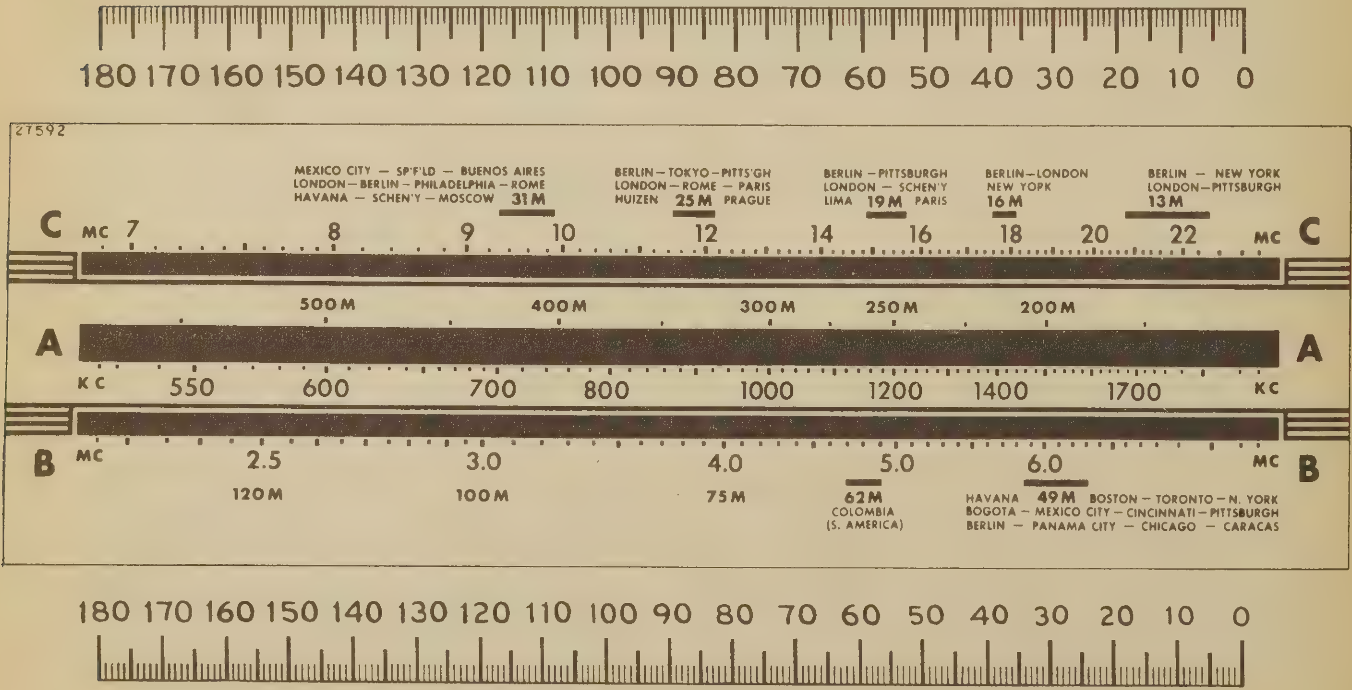
Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R93 and R94 series. A stock No. 9824 switch may be used to change from radio to record player. The connections of this switch are shown below. In the event that a No. 9824 switch is not available, a double-pole double-throw toggle switch may be used, as shown at right.


1 2 3
TERM. BOARD REAR OF CHASSIS
STOCK Nº 9824 SWITCH (REAR VIEW) "PHONO" POSITION
TAPE
RED
BLUE
SHIELD
GREEN
YELLOW
R
P
BLUE
SHIELD
K-88107
TO RECORD PLAYER

Record Player Connections, Using a No. 9824 Switch


SWITCH POSITIONS
PHONO
RADIO
SHIELDED CABLE
D.P.D.T. SWITCH
250,000Ω VOLUME CONTROL
OPEN LINK
1 2 3
PHONO BOARD ON REAR OF CHASSIS
PHONO MOTOR AND TURNTABLE
CRYSTAL OR HIGH IMPEDANCE MAGNETIC PICKUP

Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27592
MEXICO CITY — SP'F'LD — BUENOS AIRES
LONDON — BERLIN — PHILADELPHIA — ROME
HAVANA — SCHEN'Y — MOSCOW 31M
BERLIN — TOKYO — PITTS'GH
LONDON — ROME — PARIS
HUIZEN 25M PRAGUE
BERLIN — PITTSBURGH
LONDON — SCHEN'Y
LIMA 19M PARIS
BERLIN — LONDON
NEW YORK
16M
BERLIN — NEW YORK
LONDON — PITTSBURGH
13M
C MC 7 8 9 10 12 14 16 18 20 22 MC C
500M 400M 300M 250M 200M
A
A
KC 550 600 700 800 1000 1200 1400 1700 KC
B MC 2.5 3.0 4.0 5.0 6.0 MC B
120M 100M 75M
62M COLOMBIA (S. AMERICA)
HAVANA 49M BOSTON — TORONTO — N. YORK
BOGOTA — MEXICO CITY — CINCINNATI — PITTSBURGH
BERLIN — PANAMA CITY — CHICAGO — CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 31° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

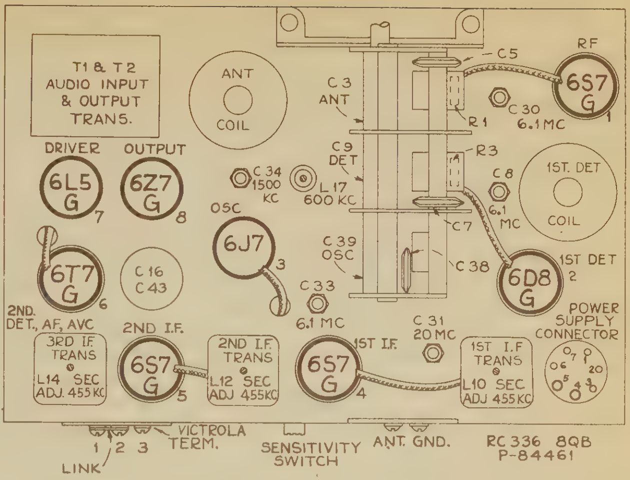
Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

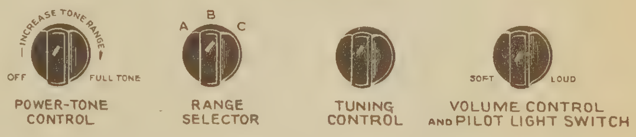
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



Top View, Showing Location of Tubes and Trimmers



Location of Controls

The pilot lights are illuminated by pressing in the volume-control knob. (The pilot lights are not controlled by this action when the receiver is operated with the CV-110 a-c power supply unit.) Sensitivity switch is on rear of chassis.

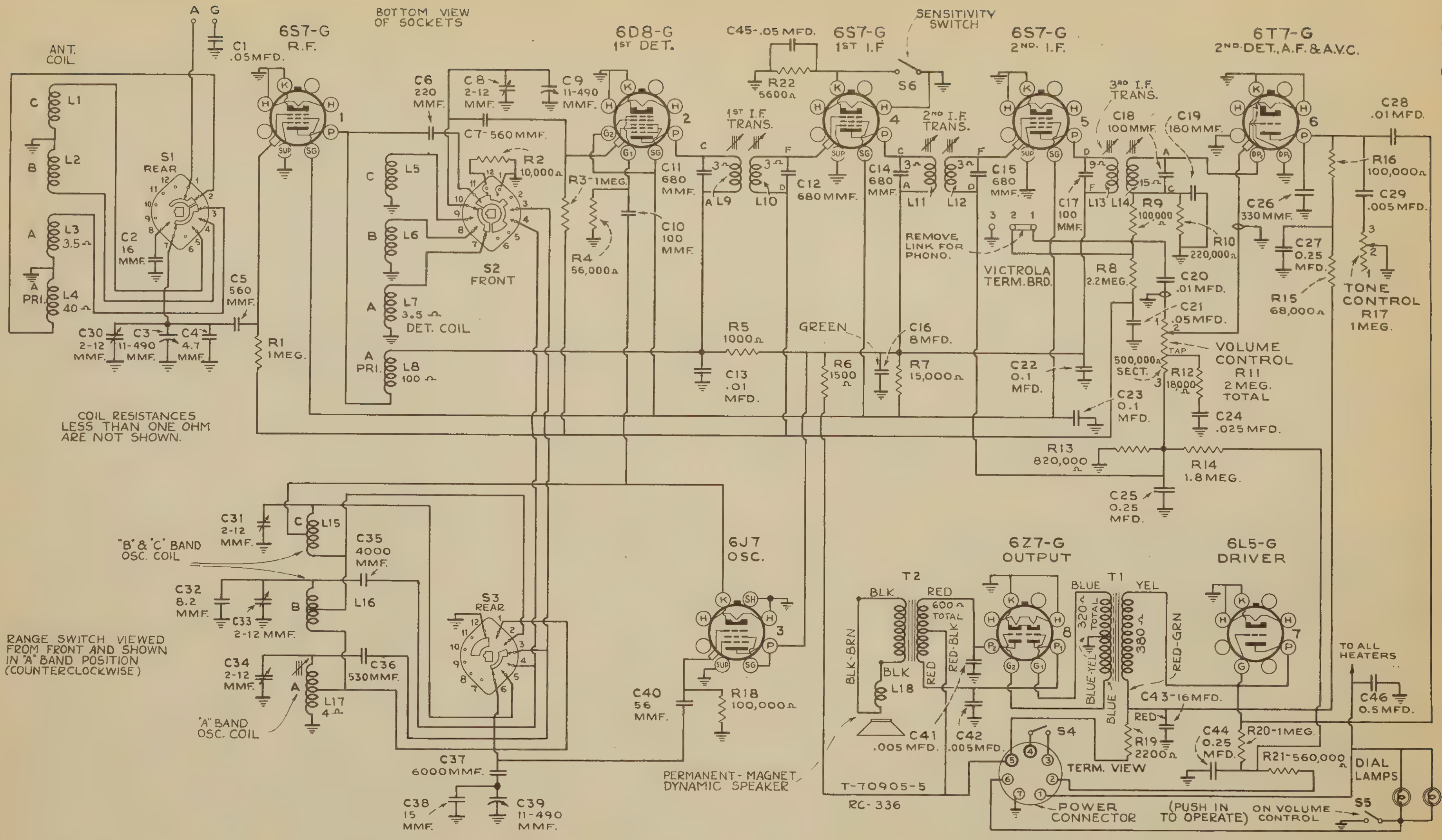
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
Leave the sensitivity switch open (minimum sensitivity) during all alignment operations.				
1	6S7-G 2nd-I.F. grid cap, in series with .01 mfd.	455 kc	"B" band, Quiet point.	L13 and L14 (3rd I-F Trans.)
2	6S7-G 1st-I.F. grid cap, in series with .01 mfd.			L11 and L12 (2nd I-F Trans.)
3	6D8-G 1st-det. grid cap, in series with .01 mfd.			L9 and L10 (1st I-F Trans.)
4	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C33 (osc.)* C8 (det.)† C30 (ant.)
4A	Check to determine that C33 has been adjusted to correct peak by turning radio to 5.19 mc (50°), where a weaker signal should be received.			
5	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C31 (osc.)*
5A	Check to determine that C31 has been adjusted to correct peak by turning radio to 19.09 mc (29.5°), where a weaker signal should be received.			
6	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C34 (osc.)*
7	Antenna Terminal in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L17 (osc.)††
8	Repeat Step No. 6.			

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.

† Rock the gang condenser slightly while adjusting C8, and use **maximum** capacity peak if two peaks can be obtained.

†† Rock the gang condenser slightly while adjusting L17 for maximum output.

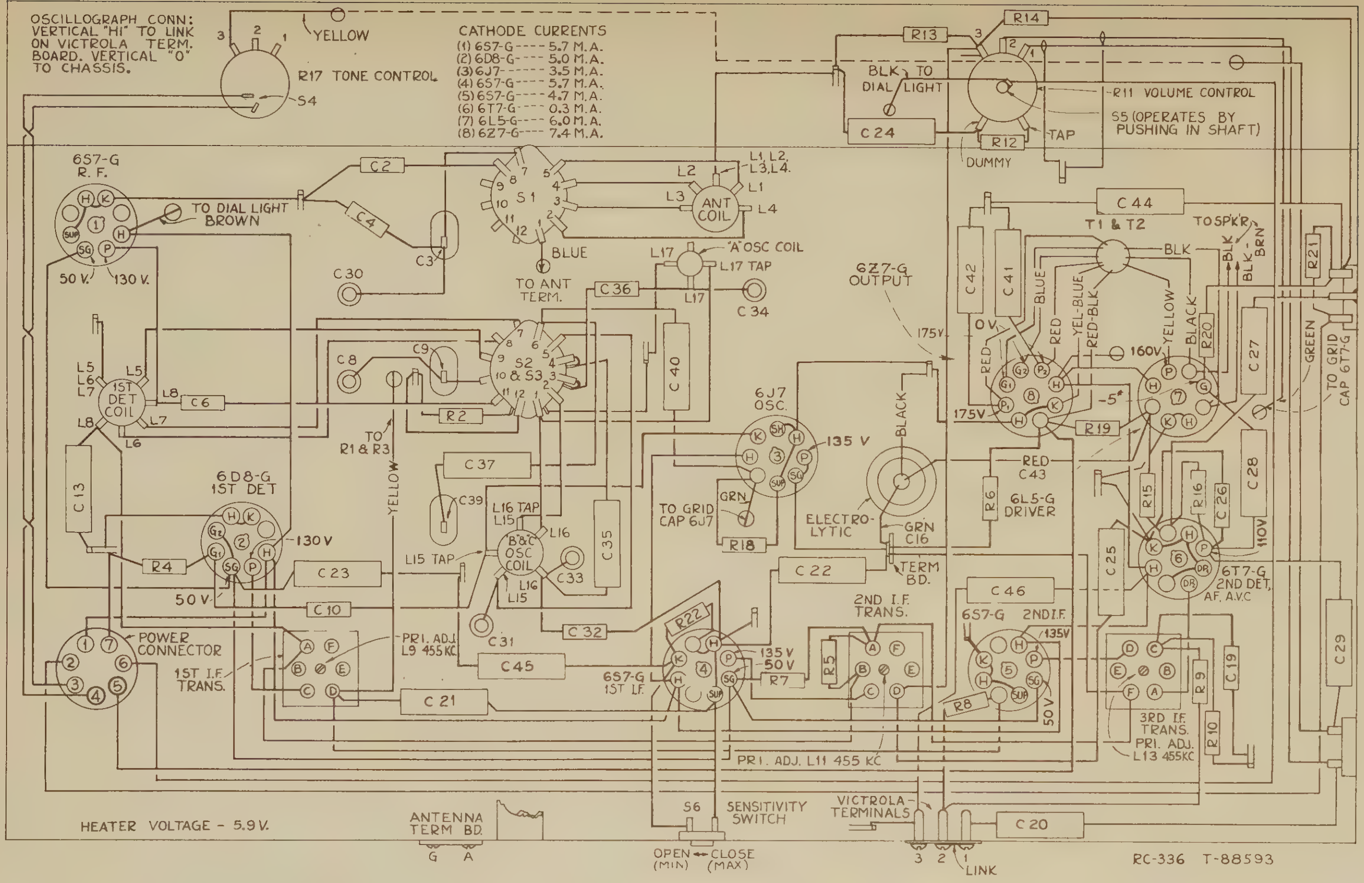
NOTE: The oscillator tracks 455 kc **above** the signal on all bands.



Schematic Circuit Diagram of Chassis

Precautionary Lead Dress.—

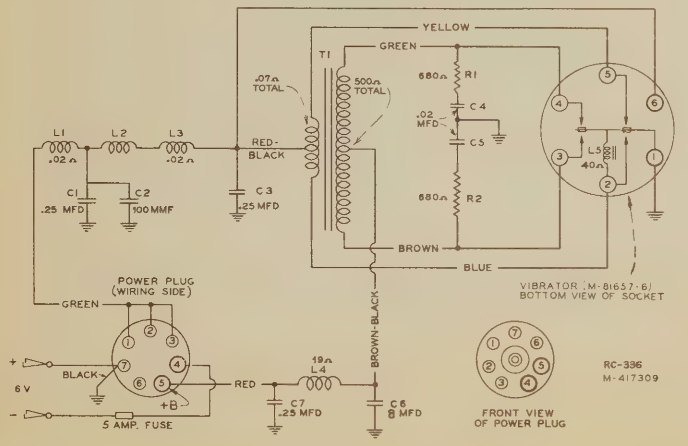
1. Dress the leads from 1st-detector coil to range switch away from trimmer C8.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to chassis.
4. Grid-cap connectors must not ground to tube shields.
5. Dress black lead from terminal 7 on power connector into corner and close to side of chassis.



Bottom View of Chassis, with R-F Wiring Diagram and Socket Voltages

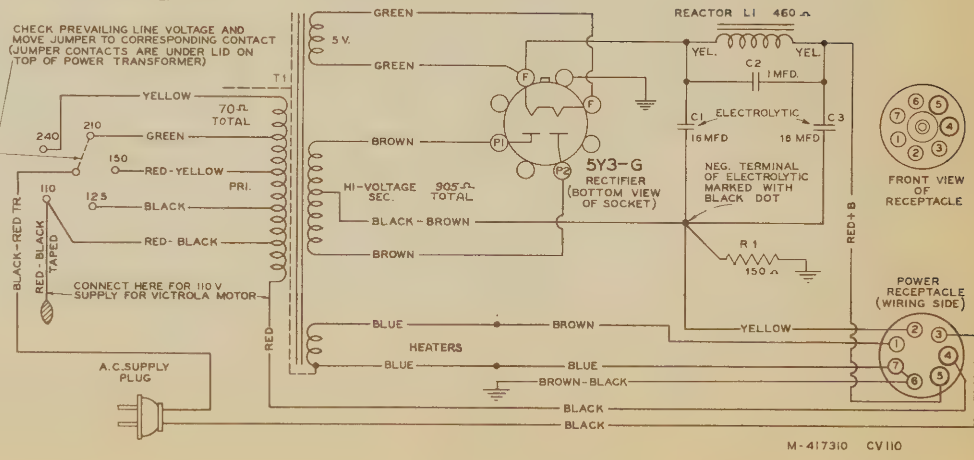
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 6-volt d-c supply.

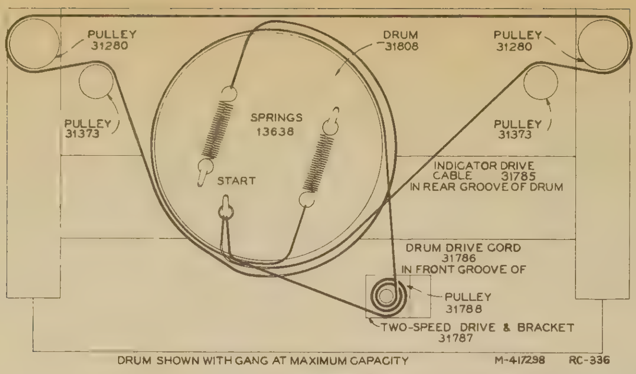
***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



← *Vibrator-Type Power Supply Unit*

→ *CV-110 A-C Power Supply Unit*


CHECK PREVAILING LINE VOLTAGE AND MOVE JUMPER TO CORRESPONDING CONTACT (JUMPER CONTACTS ARE UNDER LID ON TOP OF POWER TRANSFORMER)
T1
240
210
150
125
110
YELLOW
GREEN
RED-YELLOW
BLACK
RED-BLACK
70 Ω TOTAL
PRI.
BLACK-RED TR.
RED-BLACK TAPED
CONNECT HERE FOR 110 V SUPPLY FOR VICTROLA MOTOR
A.C. SUPPLY PLUG
5 V.
HI-VOLTAGE SEC.
905 Ω TOTAL
BLACK-BROWN
HEATERS
BLUE
BROWN
5Y3-G RECTIFIER (BOTTOM VIEW OF SOCKET)
REACTOR L1 460 Ω
YEL.
C2 1 MFD.
C1 ELECTROLYTIC C3
16 MFD
16 MFD
NEG. TERMINAL OF ELECTROLYTIC MARKED WITH BLACK DOT
R1 150 Ω
RED+B
FRONT VIEW OF RECEPTACLE
POWER RECEPTACLE (WIRING SIDE)
BROWN-BLACK
BLACK
M-417310 CV110


PULLEY 31280
DRUM 31808
PULLEY 31280
PULLEY 31373
SPRINGS 13638
PULLEY 31373
START
INDICATOR DRIVE CABLE 31785 IN REAR GROOVE OF DRUM
DRUM DRIVE CORD 31786 IN FRONT GROOVE OF
PULLEY 31788
TWO-SPEED DRIVE & BRACKET 31787
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY
M-417298
RC-336

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES (RC-336)	
13216	Board—Antenna and ground terminal board...	
12717	Board—Phonograph input terminal board......	
31785	Cable—Indicator pointer drive cable..........	
31778	Capacitor—Comprising one 8 mfd. and one 16 mfd. sections (C-16, C-43)...............	
12714	Capacitor—Trimmer, 2-12 mmfd. (C-8, C-30, C-31, C-33, C-34)..........................	
14392	Capacitor—4.7 mmfd. (C-4).................	
13001	Capacitor—8.2 mmfd. (C-32)................	
12896	Capacitor—15 mmfd. (C-38).................	
31791	Capacitor—16 mmfd. (C-2)..................	
12723	Capacitor—56 mmfd. (C-40).................	
12720	Capacitor—100 mmfd. (C-10)................	
31270	Capacitor—100 mmfd. (C-17, C-18)..........	
13003	Capacitor—180 mmfd. (C-19)................	
12694	Capacitor—220 mmfd. (C-6).................	
12952	Capacitor—330 mmfd. (C-26)................	
31790	Capacitor—530 mmfd. (C-36)................	
12537	Capacitor—560 mmfd. (C-5, C-7)............	
31552	Capacitor—680 mmfd. (C-11, C-12, C-14, C-15)	
31792	Capacitor—4,000 mmfd. (C-35)..............	
31405	Capacitor—6,000 mmfd. (C-37)..............	
4838	Capacitor—.005 mfd. (C-29, C-41, C-42)......	
14393	Capacitor—.01 mfd. (C-13, C-20, C-28).......	
4870	Capacitor—.025 mfd. (C-24)................	
4886	Capacitor—.05 mfd. (C-1, C-21, C-45)........	
4839	Capacitor—0.1 mfd. (C-22, C-23)...........	
12484	Capacitor—0.25 mfd. (C-25, C-27, C-44)......	
30867	Capacitor—0.5 mfd. (C-46).................	
31780	Coil—Antenna coil and shield (L-1, L-2, L-3, L-4)................................	
31781	Coil—R.F. coil and shield (L-5, L-6, L-7, L-8)	
31782	Coil—Oscillator coil—"A" band only (L-17)...	
31783	Coil—Oscillator coil—"B" and "C" bands only (L-15, L-16).........................	
31774	Condenser—3-gang variable tuning condenser (C-3, C-9, C-39)........................	
31786	Cord—Variable condenser drive cord..........	
31787	Drive—Two speed drive and bracket..........	
31808	Drum—Variable condenser drive cord drum with calibrator scale.........................	
11891	Lamp—Dial lamp..........................	
14028	Nut—Jamb nut for capacitor, Stock 12714....	
31817	Plate—Cushion socket mounting plate — less socket..................................	
5119	Plug—3-contact female plug for speaker cable..	
14404	Plug—7-contact plug for power input.........	
31280	Pulley—Indicator drive cord pulley (large)....	
31373	Pulley—Indicator drive cord pulley (small)....	
31788	Pulley—Variable condenser drive cord pulley—fastens on two speed drive...............	
14837	Resistor—1,000 ohms, 1/10 watt (R-5).......	
30654	Resistor—1,500 ohms, ½ watt (R-6).........	
3526	Resistor—2,200 ohms, ½ watt (R-19).........	
31789	Resistor—5,600 ohms, 1/10 watt (R-22)......	
13302	Resistor—10,000 ohms, 1/10 watt (R-2)......	
5114	Resistor—15,000 ohms, 1 watt (R-7).........	
12070	Resistor—18,000 ohms, 1/10 watt (R-12).....	
11282	Resistor—56,000 ohms, 1/10 watt (R-4)......	
12010	Resistor—68,000 ohms, 1/10 watt (R-15).....	
14560	Resistor—100,000 ohms, ¼ watt (R-9, R-16)...	
11281	Resistor—100,000 ohms, 1/10 watt (R-18)....	
11398	Resistor—220,000 ohms, 1/10 watt (R-10)....	
11397	Resistor—560,000 ohms, 1/10 watt (R-21)....	
12146	Resistor—820,000 ohms, 1/10 watt (R-13)....	
12013	Resistor—1 meg., 1/10 watt (R-1, R-3, R-20).	
5028	Resistor—1.8 meg., ¼ watt (R-14)..........	
5131	Resistor—2.2 meg., 1/10 watt (R-8).........	
14887	Retainer—Retainer for pulley, Stock 31280 and 31373..............................	
4669	Screw—No. 8-32 sq. head set screw for drum, Stock 14856, and pulley, Stock 31788......	
3950	Shield—Tube shield.......................	
31365	Socket—Dial lamp socket..................	
31251	Socket—Octal base tube socket..............	
13638	Spring—Indicator drive cable, or variable condenser drive cord tension spring...........	
31775	Switch—Range switch (S-1, S-2, S-3)........	
30953	Switch—S.P.S.T. sensitivity switch (S-6)......	
31777	Tone Control and power switch (R-17, S-4)....	
31784	Transformer—Driver and output transformer (T-1, T-2)...........................	
31268	Transformer—Third I.F. transformer (L-13, L-14, C-17, C-18)......................	
31779	Transformer—First or second I.F. transformer (L-9, L-10, C-11, C-12) (L-11, L-12, C-14, C-15)................................	
31776	Volume Control and dial light switch (R-11, S-5)	
	VIBRATOR POWER SUPPLY UNIT	
12720	Capacitor—100 mmfd. (C-2)................	
31796	Capacitor—.02 mfd. (C-4, C-5).............	
12484	Capacitor—0.25 mfd. (C-1, C-3, C-7)........	
13046	Capacitor—8 mfd. (C-6)...................	
14289	Clip—Battery clips—one marked "+" and one unmarked............................	
12819	Coil—Choke coil (L-4).....................	
31794	Coil—Choke coil (L-1, L-3)................	
5140	Fuse—5-amp..............................	
14409	Plug—7-contact female plug for power cable...	
12262	Resistor—680 ohms, ¼ watt (R-1, R-2).......	
4786	Socket—Vibrator socket....................	
31793	Transformer—Vibrator power transformer (T-1).	
31795	Vibrator—Plug-in vibrator (L-5)............	
	CV-110 A-C POWER SUPPLY UNIT	
32015	Capacitor—1 mfd. (C-2)...................	
32013	Capacitor—Comprising 2 sections 16 mfd. each (C-1, C-3)...........................	
14409	Plug—7-contact plug for power output cable..	
32014	Reactor—Filter reactor (L-1)...............	
30880	Resistor—150 ohms, ½ watt (R-1)...........	
31251	Socket—Rectifier tube socket...............	
31998	Transformer—Power transformer 105-130, 140-160, 200-250 volts, 25-60 cycles (T-1).....	
	SPEAKER ASSEMBLIES Model 8QB (Speaker RL-73-4)	
31310	Cone—Speaker cone and voice coil (L-18).....	
5118	Plug—3-contact male plug for speaker........	
31797	Speaker complete.........................	
	Model 8QBK (Speaker RL-71-5)	
31275	Cone—Speaker cone and voice coil (L-18).....	
5118	Plug—3-contact male plug for speaker........	
31798	Speaker complete.........................	
	MISCELLANEOUS ASSEMBLIES	
31800	Dial—Station selector dial scale and crystal....	
31799	Escutcheon—Dial escutcheon—less dial scale and crystal...............................	
31801	Indicator—Station selector indicator pointer complete with carriage and clip............	
31802	Knob—Station selector, range switch or tone control knob..........................	
31803	Knob—Volume control knob................	
31287	Rod—Indicator pointer slide rod............	
31306	Screen—Dial color screen and light diffuser....	
12993	Screw—No. 8-32 x ⅜-in. headless set screw for knob, Stock 31803.....................	
14270	Spring—Retaining spring for knob, Stock 31802	
31558	Stop—Indicator carriage spring stop.........	

RCA Victor

MODELS 94BK and 94BT

Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 8—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range............................ 540 to 1,750 kc
R-F Alignment Frequency................ 1,500 kc (osc., ant.)
Intermediate Frequency.............................. 455 kc

RADIOTRON COMPLEMENT

(1) RCA-1C7-G........................... First Det.-Osc.
(2) RCA-1D5-G......................... Intermediate Amp.
(3) RCA-1F7-G............... Second Det., A-F Amp., A.V.C.
(4) RCA-1G5-G.............................. Power Output

BATTERIES REQUIRED

"A", one 2½-volt air cell, or one 2-volt storage battery, or one 3-volt dry "A" battery. (With latter, use No. 30935, 2.2-ohm resistor in series with positive "A" lead.)

"B", two or three 45-volt heavy-duty "B" batteries.

CURRENT CONSUMPTION

"A", at 2 volts, 0.36 amperes.

"B", 90 volts { 12.2 ma (switch at "Current Cutter" position).
17.9 ma (switch at "Full Power" position).

"B", 135 volts, 17.0 ma. (switch left in "Current Cutter" position).

POWER OUTPUT

		Switch at "Current Cutter"	Switch at "Full Power"
90-volts "B"	Undistorted	0.02 watts	0.16 watts
	Maximum	0.23 watts	0.29 watts
135-volts "B"	Undistorted	0.30 watts	....
	Maximum	0.70 watts	....

LOUDSPEAKER

Type............................. Permanent-magnet Dynamic
Diameter (94BT)........... 5in., (94BK)........... 6½ in.
Voice-coil Impedance..................... 3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (94BT).......	12⅜ in.	10⅝ in.	6¾ in.
Cabinet Dimensions (94BK).......	37¼ in.	22 in.	10¼ in.
Chassis Base Dimensions..........	2 in.	9¾ in.	5⅝ in.

Over-all Chassis Height................................ 6 in.
Weight (94BT).................... 7 lbs. net, 9½ lbs. shipping
Weight (94BK).................. 28 lbs. net, 37 lbs. shipping
Operating Controls.... (1) Power Switch—Volume; (2) Tuning; (3) "Current Cutter" Switch at rear of chassis)
Tuning Drive Ratio.................................. 8 to 1

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30954	Cable—Battery cable complete................	
30949	Capacitor—56 Mmfd. (C9)..................	
12723	Capacitor—56 Mmfd. (C4)..................	
30904	Capacitor—100 Mmfd. (C8, C11, C12).......	
12724	Capacitor—120 Mmfd. (C16)................	
13003	Capacitor—180 Mmfd. (C13)................	
5148	Capacitor—.007 Mfd. (C18)................	
14393	Capacitor—.01 Mfd. (C14, C17)............	
4870	Capacitor—.025 Mfd. (C15)................	
30899	Capacitor—0.1 Mfd. (C1, C10).............	
13610	Capacitor—8 Mfd. (C19)...................	
30950	Coil—Antenna coil (L1, L2)...............	
30895	Coil—Oscillator coil (L3, L4)............	
30945	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C7)..................	
30877	Cord—Drive cord..........................	
30905	Core—Adjustable core for I.F. transformers...	
30951	Dial—Dial scale and dial scale holder and bracket assembly	
30701	Drum—Tuning condenser drive cord drum with set screw..........................	
14635	Indicator—Station selector indicator pointer...	
30955	Resistor—0.82 ohm, flexible type (R13).......	
14074	Resistor—82 ohms, ¼ watt (R9).............	
14561	Resistor—220 ohms, ¼ watt (R11)..........	
30538	Resistor—330 ohms, ¼ watt (R12)..........	
5029	Resistor—56,000 ohms, ¼ watt (R1).........	
12199	Resistor—270,000 ohms, ¼ watt (R7)........	
11172	Resistor—470,000 ohms, ¼ watt (R8)........	
30963	Resistor—820,000 ohms, ¼ watt (R6)........	
12679	Resistor—2.2 meg., ¼ watt (R2, R10)........	
30962	Resistor—8.2 meg., ¼ watt (R3)............	
14887	Retainer—Retainer for knob shaft............	
30952	Shaft—Station selector knob shaft...........	
3682	Shield—Radiotron shield.....................	
11196	Socket—Radiotron socket.....................	
30956	Socket—Speaker socket.......................	
14191	Spring—Drive cord tension spring...........	
30953	Switch—Current-cutter switch (S3)...........	
30948	Transformer—First I.F. (L5, L6, C8, C9)....	
30903	Transformer—Second I.F. (L7, L8, C11, C12).	
30947	Volume control and on-off switch (R5, S1, S2)	
	REPRODUCER ASSEMBLIES Model 94BT (Speaker 84226-1)	
30970	Cone—Reproducer cone and voice coil (L9)...	
30969	Reproducer complete.........................	
30971	Transformer—Output transformer (T1).......	
	Model 94BK (Speaker 84145-2)	
30973	Cone—Reproducer cone and voice coil (L9)...	
30972	Reproducer complete.........................	
30974	Transformer—Output transformer (T1).......	
	MISCELLANEOUS ASSEMBLIES	
30975	Crystal—Station selector celluloid crystal......	
14269	Knob—Station selector or volume control knob..	
12827	Plug—3-contact male plug for battery cable—94BK only...........................	
30935	Resistor—2.2 ohms, flexible type to replace Stock No. 30955 when using 3-volt battery..	
30308	Screw—Chassis mounting screw and washer—94BT only—Package of 4................	
30467	Screw—Chassis mounting screw and washer—94BK only—Package of 4................	
14270	Spring—Retaining spring for knob...........	

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Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

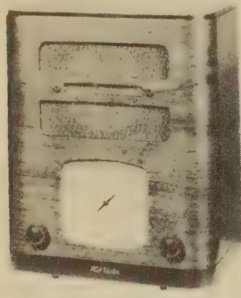
For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Re-sealing I.F. Adjustment Screws.—After completion of alignment, seal the I.F. magnetite-core adjustment screws with a few drops of household cement.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	1D5-G I-F grid cap, in series with .001 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	1C7-G 1st-det. grid cap, in series with .001 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C5* (oscillator) C2 (antenna)

* Trimmer C6 on gang condenser should be unscrewed one complete turn from tight, before adjusting C5.



Model 94BT

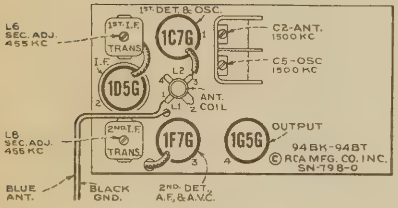
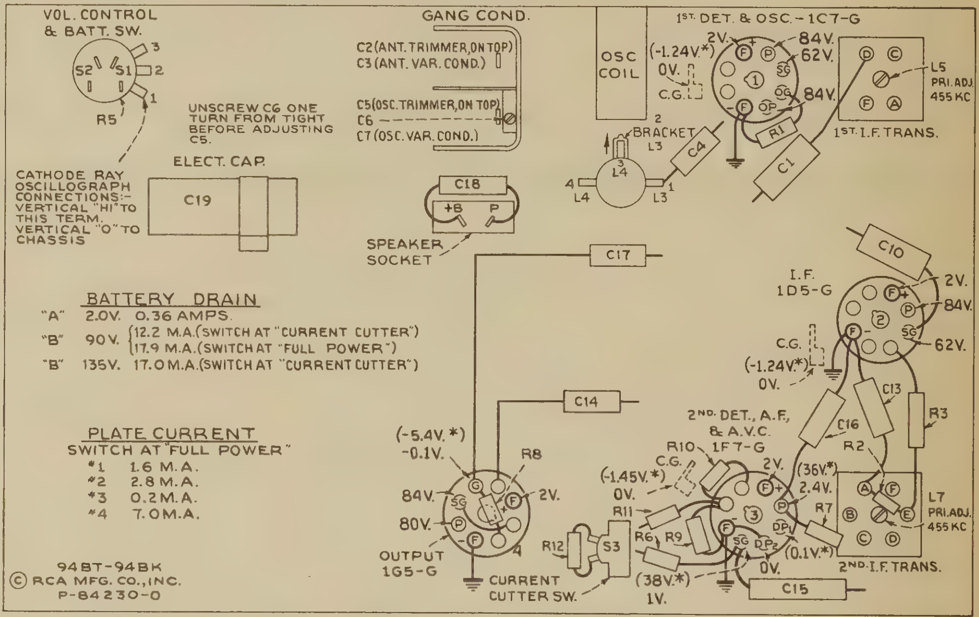


Figure 1—Radiotron and Trimmer Locations



BOTTOM VIEW—REAR OF CHASSIS

Figure 2—Radiotron Socket Voltages, and Location of Parts

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, switch at "Full Power" position, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use the nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% with 90-volts "B."

* **Note:** Values with star (*) are operating voltages.
Values not starred are actual **measured** voltages.

Precautionary Lead Dress

1. I.F. plate lead should be dressed close to and along edge of chassis.
2. Lead from antenna terminal should be wrapped (9 turns) around lead from ant. coil secondary to gang condenser (see schematic).
3. Antenna and ground leads should be arranged as shown in top view.

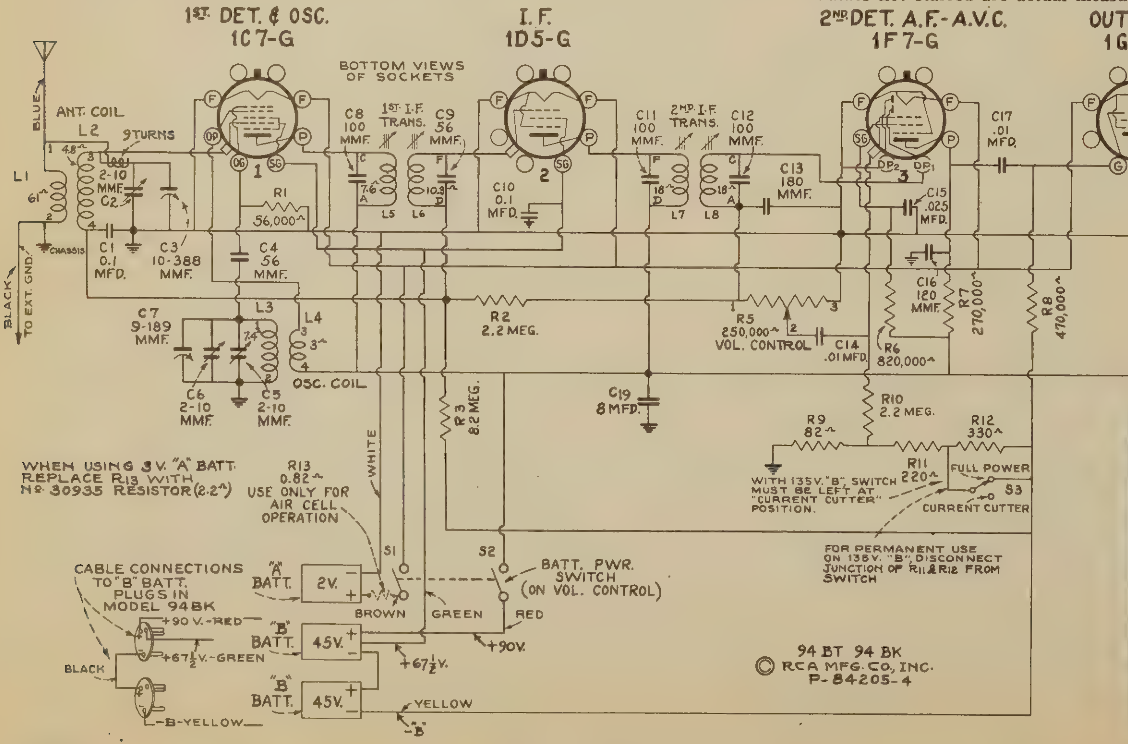


Figure 3—Schematic Circuit Diagram

Model 94BK

RCA

RCA Victor

MODELS 94BK1 and 94BT1

Chassis No. RC-333-B RC-333-B

Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 34—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	540 to 1,720 kc
RF Alignment Frequencies	600 kc (osc., ant.), 1,500 kc (osc., ant.)
Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1) RCA-1A7-G	First Detector—Oscillator
(2) RCA-1N5-G	IF Amplifier
(3) RCA-1H5-G	2nd Det., A.F., A.V.C.
(4) RCA-1C5-G	Power Output

BATTERIES REQUIRED

"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell.
"B," two 45-volt heavy duty "B" batteries.

CURRENT CONSUMPTION

"A" at 1.4 volts, 0.26 amp.
"B" at 90 volts, 9.6 ma.

POWER OUTPUT

Undistorted	0.115 watt
Maximum	0.280 watt

LOUDSPEAKER

Type	Permanent Magnet Dynamic
Diameter	94BK1, 6 inches; 94BT1, 5 inches
Voice Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (94BT1)	12⅜ in.	10⅝ in.	6¾ in.
Cabinet Dimensions (94BK1)	37¼ in.	22 in.	10¼ in.
Chassis Base Dimensions	2 in.	9¾ in.	5⅝ in.

Over-all Chassis Height	6 in.
Weight (94BT1)	7¾ lbs. net; 10½ lbs. shipping
Weight (94BK1)	26½ lbs. net; 39½ lbs. shipping
Operating Controls	(1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio	8 to 1

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
12629	Capacitor—56 mmfd. (C6)	
12723	Capacitor—56 mmfd. (C13)	
14262	Capacitor—110 mmfd. (C5)	
12404	Capacitor—120 mmfd. (C7, C8)	
12725	Capacitor—150 mmfd. (C11)	
14712	Capacitor—180 mmfd. (C9)	
30433	Capacitor—430 mmfd. (C17)	
5148	Capacitor—.007 mfd. (C12)	
14393	Capacitor—.01 mfd. (C4, C10, C19)	
4839	Capacitor—0.1 mfd. (C1)	
32187	Capacitor—8 mfd. (C18)	
32150	Coil—Antenna coil (L1, L2)	
32148	Coil—Oscillator coil (L3, L4)	
32147	Condenser—2-gang variable tuning condenser (C2, C3, C14, C15, C16)	
30877	Cord—Drive cord	
30905	Core—Adjustable core for I.F. transformers	
32186	Dial—Dial scale, plate, and brackets assembled	
30701	Drum—Tuning condenser drive cord drum with set screw	
14635	Indicator—Station selector indicator pointer	
32208	Plug—2-prong male plug for battery cable	
12827	Plug—3-prong male plug for battery cable	
14076	Resistor—820 ohms, ¼ watt (R9)	
14284	Resistor—22,000 ohms, 1/10 watt (R3)	
13715	Resistor—68,000 ohms, ¼ watt (R1)	
12264	Resistor—220,000 ohms, ¼ watt (R10)	
13730	Resistor—1 meg., ¼ watt (R4, R6)	
12679	Resistor—2.2 meg., ¼ watt (R2, R7, R8)	
14887	Retainer—Retainer for knob shaft	
30952	Shaft—Station selector knob shaft	
32149	Shield—Tube shield	
11196	Socket—Tube socket	
30956	Socket—Speaker socket	
14191	Spring—Drive cord tension spring	
14261	Transformer—First I.F. (L5, L6, C5, C6)	
14308	Transformer—Second I.F. (L7, L8, C7, C8, C9, R3)	
30947	Volume control and on-off switch (R5, S1, S2)	
	SPEAKER ASSEMBLIES Model 94BT1 (Speaker 84226-3)	
32163	Cone—Speaker cone and voice coil (L9)	
32162	Speaker—Complete	
32164	Transformer—Output transformer (T1)	
	SPEAKER ASSEMBLIES Model 94BK1 (Speaker 84145-2)	
30973	Cone—Speaker cone and voice coil (L9)	
30972	Speaker—Complete	
30974	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
30975	Crystal—Station selector celluloid crystal	
31355	Knob—Tuning or volume control knob	
30308	Screw—Chassis mounting screw and washer—(94BT1 only) 4 required	
30467	Screw—Chassis mounting screw and washer—(94BK1 only) 4 required	
14270	Spring—Retaining spring for knob	

First Edition

Printed in U. S. A.

Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

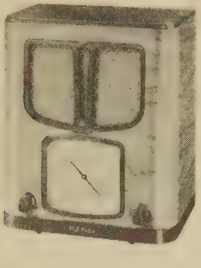
Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

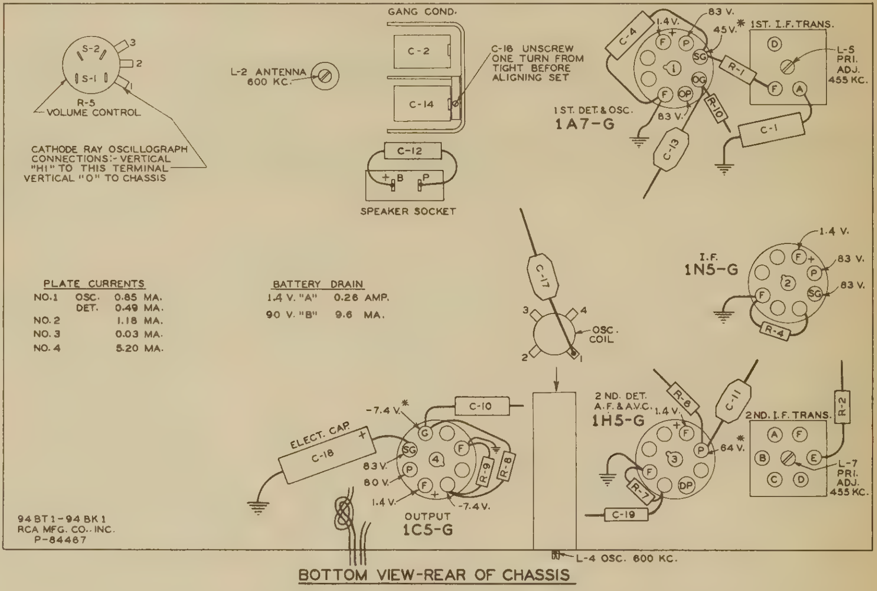
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	1N5-G I-F grid cap, in series with 0.01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	1A7-G 1st-det. grid cap, in series with 0.01 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	600 kc	600 kc	L4 (oscillator) L2 (antenna)
No. 4	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C15† (oscillator) C3 (antenna)

† Trimmer C16 on gang condenser should be unscrewed one complete turn from tight, before adjusting C15.



Model 94BT1

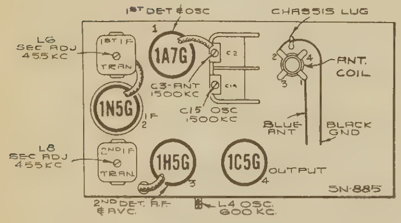
Model 94BK1



Socket Voltages, and Location of Parts

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

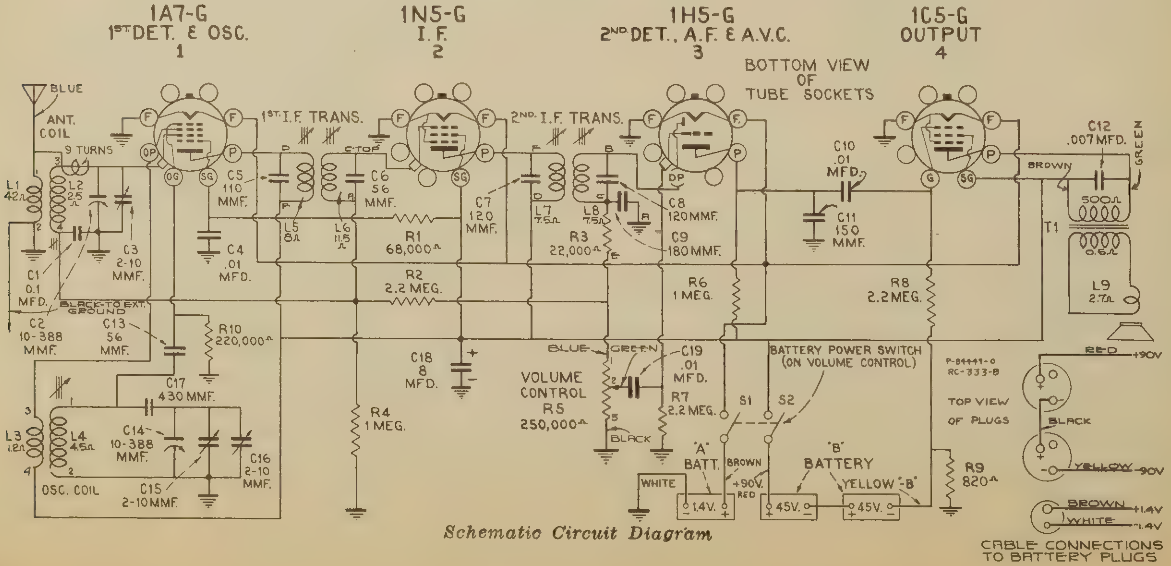
Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.



Tube and Trimmer Locations

Precautionary Lead Dress

1. Red lead from second i-f transformer to screen terminal of 1N5-G must be dressed close to and along edge of chassis.
2. Twisted green wire from antenna coil to gang must be 9 turns and kept clear of rotor.
3. Blue and green leads to volume control must be dressed close to chassis and between gang and front apron.



Schematic Circuit Diagram

RCA

RCA Victor

MODELS 94BK2 and 94BT2

Chassis No.	RC-390	RC-390

Four-Tube, Electric-Tuning, Two-Band, Battery-Operated, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 39—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)	540—1,720 kc
Short Wave ("C" Band)	5.8—15.4 mc
Four Electric Tuning Positions	550—1,500 kc

One station between approximately 550— 950 kc (Button No. 1)
One station between approximately 610—1,090 kc (Button No. 2)
One station between approximately 750—1,370 kc (Button No. 3)
One station between approximately 845—1,500 kc (Button No. 4)

Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1) RCA-1A7-G	First Detector—Oscillator
(2) RCA-1N5-G	I-F Amplifier
(3) RCA-1H5-G	2nd Detector, A.V.C., and 1st A.F.
(4) RCA-1A5-G	Power Output

BATTERIES REQUIRED

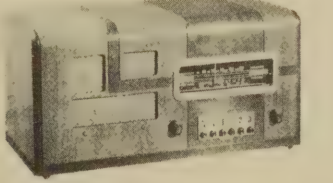
"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell
"B," two 45-volt heavy-duty "B" batteries

CURRENT CONSUMPTION

"A," 0.2 amp. at 1.4 volts
"B," 6.8 ma. at 90 volts

General Description

The 94BK2 is a console model; the 94BT2 a table model. Each of these receivers is a low-drain, battery-operated superheterodyne. The design features include gang-tuned push button coils for single control electric tuning adjustments; magnetite-core i-f transformers and "A" band r-f coils; automatic volume control; and permanent magnet dynamic speaker. Push button electric tuning is provided for four favorite broadcast stations; two additional push-buttons provide dial tuning for "Standard-broadcast" and "Short-wave" bands.



Model 94BT2

POWER OUTPUT

Undistorted	0.08 watt
Maximum	0.18 watt

LOUDSPEAKER

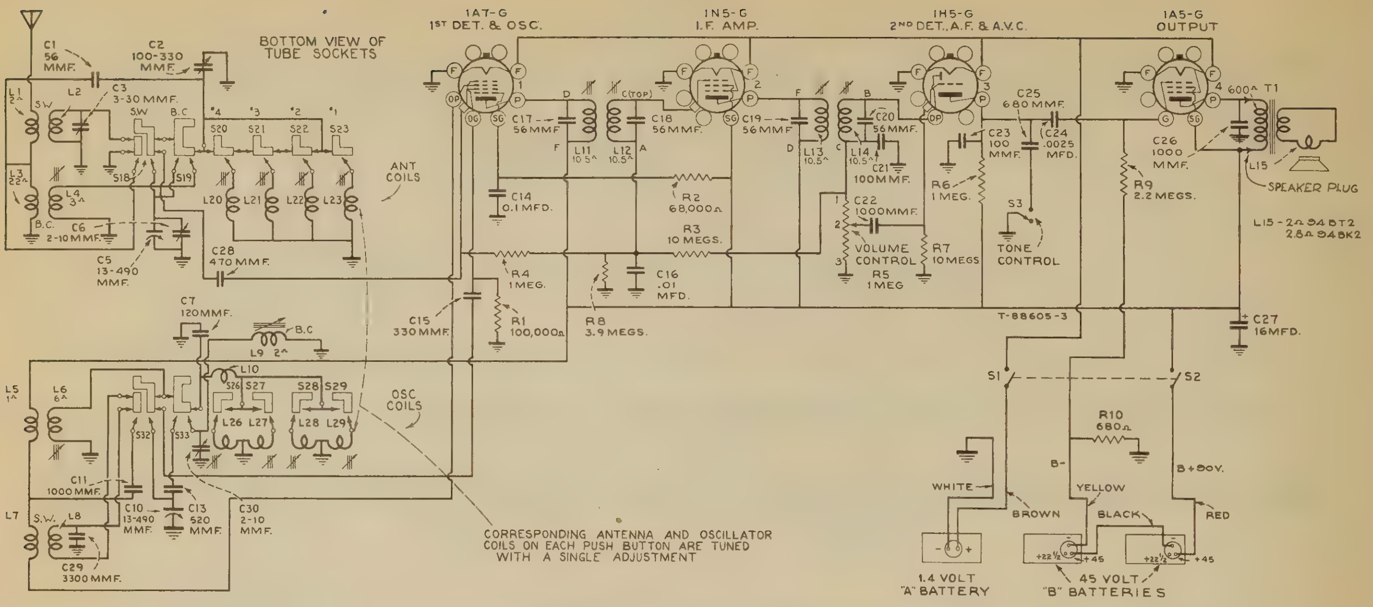
Type	Permanent Magnet Dynamic
Diameter	94BK2, 8 inches; 94BT2, 6 inches
Voice Coil Impedance (at 400 cycles)	94BK2, 3 ohms; 94BT2, 2.2 ohms

	Model 94BK2	Model 94BT2
Height	37¼ inches	10⅝ inches
Width	22 inches	20-13/16 inches
Depth	10 inches	9¾ inches
Net Weight	40½ pounds	15¼ pounds
Shipping Weight	53½ pounds	19 pounds
Chassis Base Dimensions	3 inches x 11⅛ inches x 5 inches	
Over-all Height of Chassis	7¾ inches	
Tuning Drive Ratio	12 to 1	

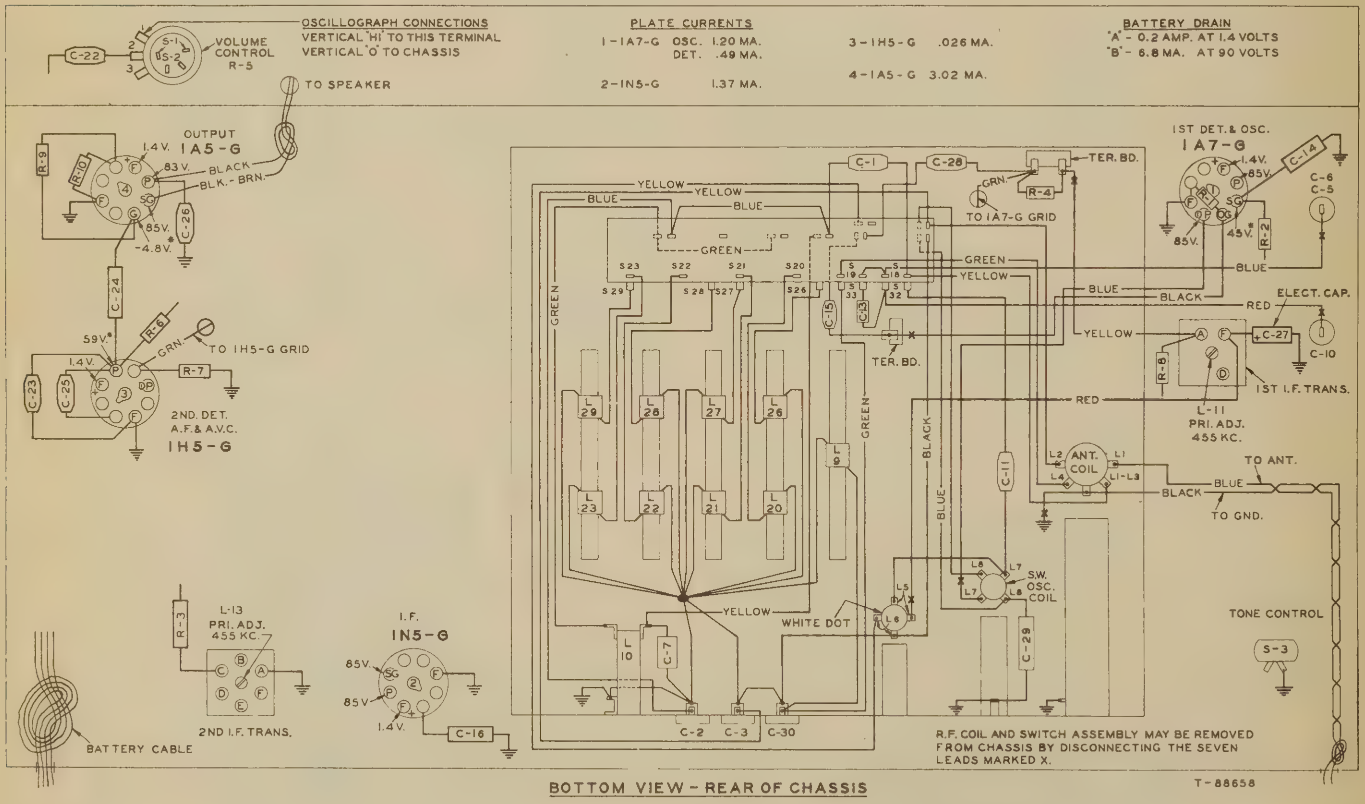
Model 94BK2

First Edition

Printed in U. S. A.



Schematic Circuit Diagram



OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS

PLATE CURRENTS
1 - 1A7-G OSC. 1.20 MA.
DET. .49 MA.
2 - 1N5-G 1.37 MA.
3 - 1H5-G .026 MA.
4 - 1A5-G 3.02 MA.

BATTERY DRAIN
"A" - 0.2 AMP. AT 1.4 VOLTS
"B" - 6.8 MA. AT 90 VOLTS

BOTTOM VIEW - REAR OF CHASSIS

R-F Wiring Diagram and Socket Voltages

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

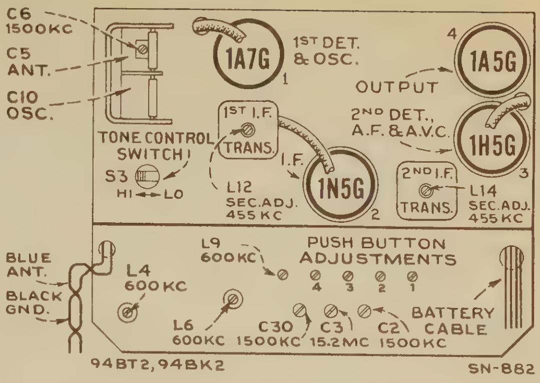
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment".



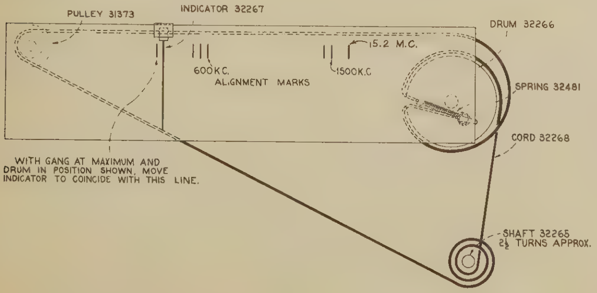
Tube and Trimmer Locations

Steps	Connect the High Side of Test Oscillator to:	Tune Test Oscillator to:	Push Button	Turn Radio Dial to:	Adjust for Maximum Peak Output:
1	1N5-G I-F grid cap in series with .01 mfd.	455 kc	B.C. (5)	No Signal between 550—750 kc.	L13 and L14 (2nd I-F Trans.)
2	1A7-G Det. grid cap in series with .01 mfd.	455 kc	B.C. (5)		L11 and L12 (1st I-F Trans.)
3	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No.4 Push Button Adj.) C2 (ant.)
4	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 *(No. 1 Push Button Adj.) L6 (osc.)
5	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No. 4 Push Button Adj.) C2 (ant.)
6	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 *(No. 1 Push Button Adj.) L6 (osc.)
7	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (5)	1,500 kc Cal. Mark	C30 (osc.) C6 (ant.)
8	Antenna Lead (blue) in series with 200 mmfd.	600 kc	B.C. (5)	600 kc Cal. Mark	L9 (osc.) L4 (ant.)
9	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (5)	1,500 kc Cal. Mark	C30 (osc.) C6 (ant.)
10	Antenna Lead (blue) in series with 300 ohms	15.2 mc	S.W. (6)	Signal Near 15.2 mc Cal. Mark†	**C3 (ant.)
11	Follow the "Adjustments for Electric Tuning."				

* Adjust L23—L29 (No. 1 push button adjustment) and L6 at the same time, rocking in for maximum signal.

** Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal. A weaker signal (image) should be received about one-quarter inch to the left on the dial plate.

† If two signals are received, set the dial to the higher frequency (right hand) position.



Dial Drive Hookup and Alignment Marks

Note: The oscillator tracks 455 kc above the signal on all bands. After the receiver has been installed and the antenna connected, it is sometimes advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on this button.

Precautionary Lead Dress

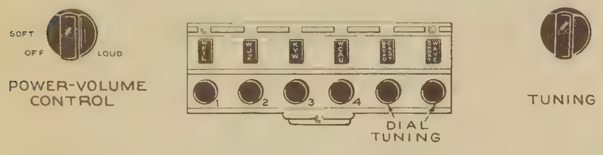
1. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.
2. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.
3. Leads to push button coils must be dressed close to the coils.
4. Red and blue leads to gang condenser must be dressed away from chassis.
5. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.

Adjustments for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tandem-tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in Note under "Alignment Procedure."



Location of Controls

Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

The push button switch and coil assembly may be removed from the chassis by removing two screws from the front apron, one from the rear apron, removing the 1A7-G grid connector from the grid cap, and disconnecting the seven leads indicated on the Wiring Diagram.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
32259	Capacitor—3-section variable trimmer capacitor 2-10, 3-30, 100-330 mmfd. (C30, C3, C2)..	
30949	Capacitor—56 mmfd. (C17, C18, C19, C20)..	
12723	Capacitor—56 mmfd. (C1)................	
30904	Capacitor—100 mmfd. (C21)...............	
12720	Capacitor—100 mmfd. (C23)...............	
12724	Capacitor—120 mmfd. (C7)................	
12952	Capacitor—330 mmfd. (C15)...............	
30433	Capacitor—470 mmfd. (C28)...............	
32269	Capacitor—520 mmfd. (C13)...............	
14498	Capacitor—680 mmfd. (C25)...............	
12635	Capacitor—1,000 mmfd. (C11, C22, C26)....	
4881	Capacitor—3,300 mmfd. (C29)..............	
5107	Capacitor—.0025 mfd. (C24)...............	
14393	Capacitor—.01 mfd. (C16)................	
4839	Capacitor—0.1 mfd. (C14)................	
31323	Capacitor—16 mfd. (C7)..................	
32254	Coil—Broadcast oscillator coil (L9)..........	
32258	Coil—Antenna coil (L1, L2, L3, L4)........	
32260	Coil—Short wave oscillator coil (L7, L8).....	
32256	Coil—Push button osc. series coil (L10)......	
32250	Coil—Push button ant. and oscillator coil (L23, L29)	
32251	Coil—Push button ant. and oscillator coil (L22, L28)	
32252	Coil—Push button ant. and oscillator coil (L21, L27)	
32253	Coil—Push button ant. and oscillator coil (L20, L26)	
32257	Coil—Push button osc. shunt coil (L5, L6)....	
32249	Condenser—2-gang variable condenser (C5, C6, C10)	
32268	Cord—Drive cord..........................	
12800	Core—Variable core and stud for antenna coil No. 32258.........................	
32266	Drum—Variable condenser drive drum........	
32267	Indicator—Dial scale pointer...............	
32208	Plug—2-prong male for battery cable.........	
5119	Plug—3-contact female for speaker cable......	
12827	Plug—3-prong male for battery cable.........	
31373	Pulley—Drive cord pullley..................	
14887	Retainer—Tuning knob shaft retainer or drive cord pulley retaining washer.............	
12262	Resistor—680 ohms, ¼ watt (R10)..........	
13715	Resistor—68,000 ohms, ¼ watt (R2).........	
14560	Resistor—100,000 ohms, ¼ watt (R1)........	
13730	Resistor—1 meg., ¼ watt (R4, R6)..........	
12679	Resistor—2.2 meg., ¼ watt (R9)............	
13167	Resistor—3.9 meg., ¼ watt (R8)............	
13601	Resistor—10 meg., ¼ watt (R3, R7).........	
4669	Screw—No. 8-32 square head set screw from drum	
32261	Screw—Push button oscillator coil adjustment screw and mounting nut.................	
32265	Shaft—Tuning knob shaft..................	
3682	Shield—Tube shield.......................	
31251	Socket—Tube socket.......................	
32481	Spring—Drive cord tension spring...........	
12007	Spring—Retaining spring for oscillator coil adjustment screw	
32255	Switch—Push button switch (S18, S19, S20, S21, S22, S23, S26, S27, S28, S29, S32, S33)	
30953	Switch—Tone control switch (S3)...........	
32263	Transformer—First I-F transformer (L11, L12, C17, C18)............................	
32264	Transformer—Second I-F transformer (L13, L14, C19, C20, C21)..................	
32262	Volume control and power switch (R5, S1, S2)	
	SPEAKER ASSEMBLIES (84307-2) Model 94BT2	
32271	Cone—Speaker cone and voice coil (L15).....	
5118	Plug—3-contact male for speaker............	
32270	Speaker complete.........................	
32272	Transformer—Output transformer (T1).......	
	SPEAKER ASSEMBLIES (84477-1) Model 94BK2	
32274	Cone—Speaker cone and voice coil (L15).....	
5118	Plug—3-contact male for speaker............	
32273	Speaker complete.........................	
32272	Transformer—Output transformer (T1).......	
	MISCELLANEOUS ASSEMBLIES	
32279	Button—Push button	
31935	Clip—Spring clip to hold dial scale...........	
32276	Dial—Dial scale (glass)....................	
32277	Escutcheon—Dial scale escutcheon and crystal..	
32278	Escutcheon—Push button escutcheon.........	
31355	Knob—Station selector or volume control knob.	
32281	Marker—"Broadcast" marker tab	
32067	Marker—Push button call letter markers......	
32280	Marker—"Short Wave" marker tab..........	
14267	Screw—Chassis mounting screw and washer (4 required), Model 94BT2................	
30467	Screw—Chassis mounting screw and washer (4 required), Model 94BK2................	
14270	Spring—Retaining spring for knob...........	

RCA Victor

MODEL 94BP4 PORTABLE

Chassis No. RC-410

Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 40—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range.................. 550-1,560 kc
Intermediate Frequency.................. 455 kc

RCA TUBE COMPLEMENT
(1) RCA-1A7-G.................. 1st-Det.—Osc.
(2) RCA-1N5-G.................. I-F Amplifier
(3) RCA-1H5-G.................. 2nd-Det., A-F, and A.V.C.
(4) RCA-1C5-G.................. Output

BATTERIES REQUIRED
"A," one 1.5 volt dry plug-type "A," 2½-in. x 2½-in. x 4-in. (No. 742)
"B," two 45 volt dry plug-type "B," 2½-in. x 4-in. x 5¼-in. (No. 732)

CURRENT CONSUMPTION
"A" 0.24 ampere—"B," 9.0 milliamperes

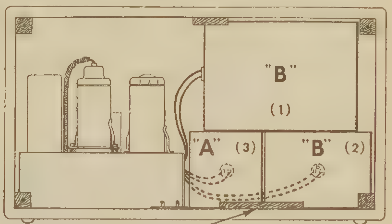
POWER OUTPUT
Undistorted.................. 0.10 watt
Maximum.................. 0.21 watt

LOUDSPEAKER
Type.................. 5-inch permanent-magnet dynamic
Voice-coil Impedance.................. 2.2 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (inches)	7¾	14	8⅛
Chassis Base Dimensions (inches)	2	7½	5½

Over-all Chassis Height.................. 6½ inches
Weight—Shipping weight, less batteries.................. 12½ pounds
Net weight, with batteries.................. 16 pounds
Tuning Drive Ratio.................. 8 to 1

Model 94BP4



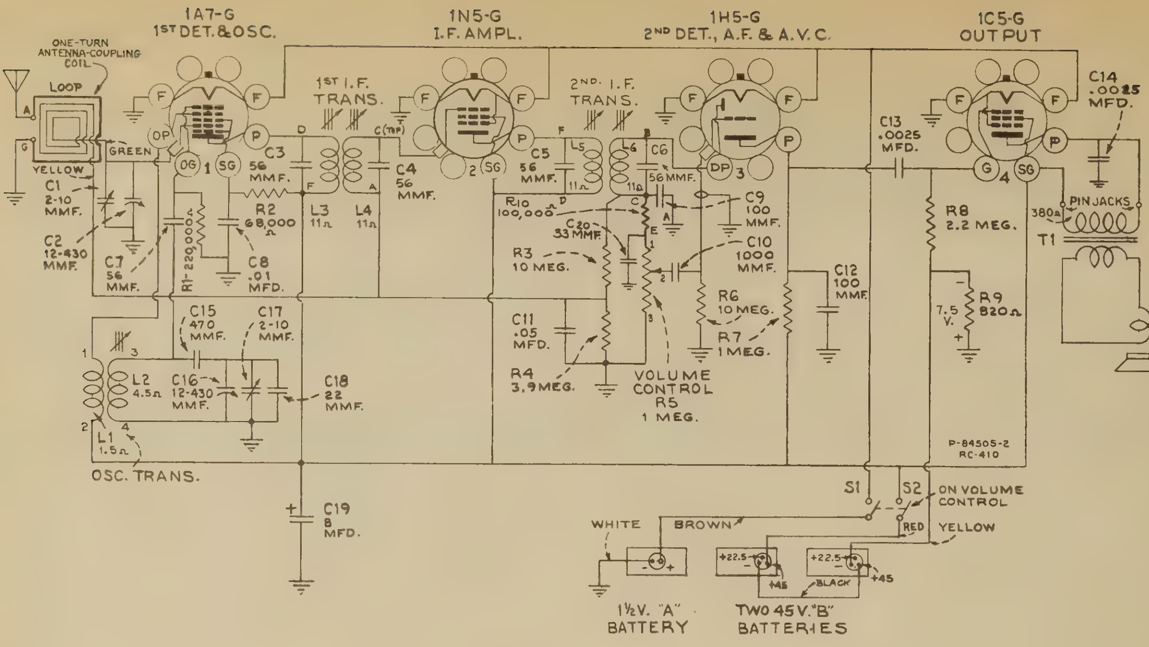
Battery Arrangement

REMOVE THIS BLOCK, PLUG IN CABLES AND PLACE BATTERIES IN CABINET AS SHOWN, IN THE ORDER INDICATED. REPLACE CLAMPING BLOCK.

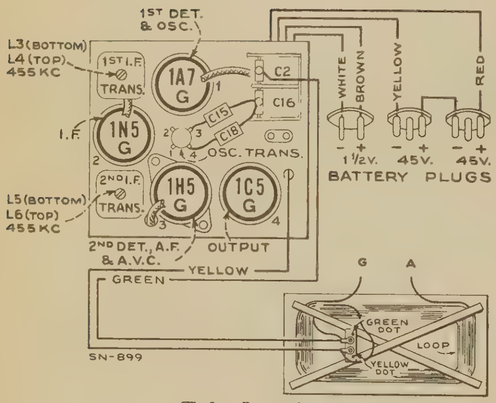
Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES (RC-410)	
32592	Bracket—Dial bracket	
12607	Cap—Shield cap for first i.f. transformer	
12581	Cap—Shield cap for second i.f. transformer	
32598	Cap—Shield cap for 1H5G	
32596	Cap—Tube shield cap	
14021	Capacitor—22 mmfd. (C18)	
12948	Capacitor—33 mmfd. (C20)	
30949	Capacitor—56 mmfd. (C3, C4, C5, C6)	
12723	Capacitor—56 mmfd. (C7)	
30904	Capacitor—100 mmfd. (C9)	
12720	Capacitor—100 mmfd. (C12)	
30433	Capacitor—470 mmfd. (C15)	
12635	Capacitor—1,000 mmfd. (C10)	
5107	Capacitor—.0025 mfd. (C13, C14)	
14393	Capacitor—.01 mfd. (C8)	
4886	Capacitor—.05 mfd. (C11)	
32187	Capacitor—8 mfd., 150 volts (C19)	
32148	Coil—Oscillator coil (L1, L2)	
32591	Condenser—2-gang variable (C1, C2, C16, C17)	
32634	Cord—Condenser and pointer drive cord	
32593	Dial—Dial scale	
30701	Drum—Drive cord drum	
32605	Indicator—Dial indicator pointer	
32208	Plug—2-contact male for "A" leads	
32641	Plug—3-contact male for "B" leads	
14076	Resistor—820 ohms, ¼ watt (R9)	
13715	Resistor—68,000 ohms, ¼ watt (R2)	
14560	Resistor—100,000 ohms, ¼ watt (R10)	
12264	Resistor—220,000 ohms, ¼ watt (R1)	
13730	Resistor—1 meg., ¼ watt (R7)	
12679	Resistor—2.2 meg., ¼ watt (R8)	
13167	Resistor—3.9 meg., ¼ watt (R4)	
13601	Resistor—10 meg., ¼ watt (R3, R6)	
14887	Retainer—Tuning knob shaft retainer	
4669	Screw No. 8-32 x ⅜ set screw for drum, Stock No. 30701	
32609	Shaft—Dial pointer shaft and pulley	
32597	Shaft—Tuning knob shaft	
32595	Shield—Tube shield—less cap	
31251	Socket—Tube socket	
30956	Socket—2-contact female	
14191	Spring—Condenser drive cord spring	
30631	Spring—Pointer drive cord spring	
32263	Transformer—First i.f. transformer (L3, L4, C3, C4)	
32264	Transformer—Second i.f. transformer (L5, L6, C5, C6, C9)	
32594	Volume control and switch (R5, S1, S2)	
	MISCELLANEOUS ASSEMBLIES	
32602	Bezel—Dial bezel and crystal	
32163	Cone—Speaker cone and voice coil (L7)	
32600	Escutcheon—Knob escutcheon	
32603	Grille—Speaker grille and screen	
32633	Handle—Carrying handle	
32604	Loop—Antenna loop complete	
32601	Retainer—Knob escutcheon retainer	
32162	**Speaker complete (84226-3)**	
11349	Spring—Knob retaining spring	
32164	Transformer—Output transformer (T1)	

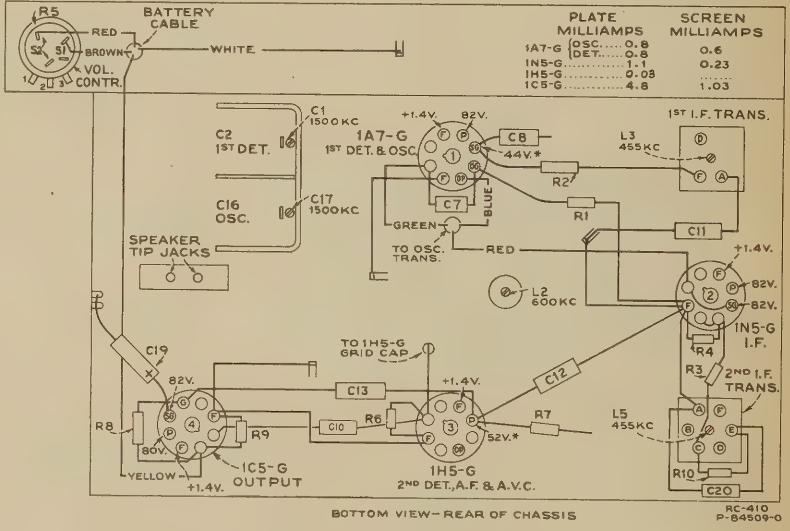


Schematic Circuit Diagram



Tube Location

Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages. Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.



R-F Wiring Diagram and Socket Voltages

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Precautionary Lead Dress.—

1. Dress speaker leads down to chassis.
2. The green lead from the loop to the antenna section of the gang should be dressed between the output and detector tube shields and pulled toward the far corner of the loop by means of the rubber band.
3. The spiral shield on the 1st-A.F. grid lead should be brought as close as possible to the grid cap.
4. Leads to the high side and tap of the volume control should be dressed down to the chassis and away from the output tube plate lead.

Antenna.—An antenna and ground may be connected to "A" and "G" at bottom of cabinet. If total length of antenna and lead-in is more than 150 feet, connect a 300 mmf capacitor in series with lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1N5-G grid cap, in series with .001 mfd.	455 kc	Quiet point between 550-750 kc	L5 and L6 (2nd I-F transformer)
2	1A7-G grid cap, in series with .001 mfd.	455 kc		L3 and L4 (1st I-F transformer)
3	Assemble chassis and batteries in correct position in cabinet, and fasten rear cover (loop) in place while making the following adjustments, which are accessible through holes in the bottom of the cabinet.			
4	Antenna terminal, in series with 200 mfd. Connect low side of test-osc. to "G" term.	1500 kc	1500 kc*	C17 (osc.) C1 (ant.)
5		600 kc	600 kc*	L2 (osc.) Rock in
6	Repeat steps 4 and 5.			

* Use bottom of "1" in "150" for 1500 kc calibration point, and use center of "0" in "60" for 600 kc calibration point.

RCA Victor

MODEL 94BT6

Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 9—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	540 to 1,750 kc
R-F Alignment Frequency	1,500 kc
Intermediate Frequency	455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8-G	First Det.-Osc.
(2) RCA-6K7-G	Intermediate Amp.
(3) RCA-6Q7-G	Second-Det., A-F Amp., A.V.C.
(4) RCA-6K6-G	Power Output

BATTERY REQUIRED	CURRENT CONSUMPTION
6-volt Storage "A" Battery.	At 6 volts, 2.8 amperes.

POWER OUTPUT (6 volts "A")

Undistorted	0.45 watts
Maximum	0.7 watts

LOUDSPEAKER

Type	5-inch Permanent-magnet Dynamic
Voice-coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions	12⅜ in.	10⅝ in.	6¾ in.
Chassis Base	2 in.	9¾ in.	5⅝ in.

Over-all Chassis Height	6¾ in.
Weight	11 lbs. net, 13½ lbs. shipping
Operating Controls	(1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio	8 to 1

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES
30959	Cable—Battery cable complete
30967	Cable—Shielded volume control cable
12723	Capacitor—56 Mmfd. (C8)
30904	Capacitor—100 Mmfd. (C9, C10, C12, C13)
12724	Capacitor—120 Mmfd. (C17)
13003	Capacitor—180 Mmfd. (C14)
30964	Capacitor—330 Mmfd. (C4)
30966	Capacitor—1,000 Mmfd. (C22)
14393	Capacitor—.01 Mfd. (C15, C18, C19)
4937	Capacitor—.01 Mfd. (C27)
4886	Capacitor—.05 Mfd. (C11)
4839	Capacitor—0.1 Mfd. (C16)
30899	Capacitor—0.1 Mfd. (C1)
30965	Capacitor—0.25 Mfd. (C20)
30961	Capacitor—Comprising 2 sections each 16 Mfd. (C23, C24)
30968	Coil—"A" filter choke coil (L10)
30950	Coil—Antenna coil (L1, L2)
30895	Coil—Oscillator coil (L3, L4)
30945	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C7)
30877	Cord—Drive cord
30905	Core—Adjustable core for I.F. transformers
14289	Clips—Battery clips—1 marked "+" and 1 unmarked
30951	Dial—Dial scale and dial scale holder and bracket assembly
30701	Drum—Tuning condenser drive cord drum with set screw
5140	Fuse—Battery cable fuse (F1)
14635	Indicator—Station selector indicator pointer
13220	Resistor—56 ohms, ¼ watt (R16)
14074	Resistor—82 ohms, ¼ watt (R9)
30498	Resistor—390 ohms, ½ watt (R18)
30681	Resistor—470 ohms, 1 watt (R12)
11353	Resistor—680 ohms, ¼ watt (R10)
5175	Resistor—5,600 ohms, ½ watt (R17)
12759	Resistor—15,000 ohms, ½ watt (R3)
14284	Resistor—22,000 ohms, 1/10 watt (R15)
5029	Resistor—56,000 ohms, ¼ watt (R1)
11172	Resistor—470,000 ohms, ¼ watt (R7, R11)
12679	Resistor—2.2 meg., ¼ watt (R4, R6)
30271	Resistor—4.7 meg., ¼ watt (R2)
14887	Retainer—Retainer for knob shaft
30952	Shaft—Station selector knob shaft
3682	Shield—Radiotron shield
11196	Socket—Radiotron socket
30956	Socket—Speaker socket
14312	Socket—Vibrator socket
14191	Spring—Drive cord tension spring
30957	Transformer—First I.F. transformer (L5, L6, C9, C10)
30903	Transformer—Second I.F. transformer (L7, L8, C12, C13)
30960	Transformer—Vibrator transformer (T1, C21, L11)
14309	Vibrator—Plug in vibrator (L12)
30958	Volume control and on-off switch (R5, S1)
	REPRODUCER ASSEMBLIES (Speaker 84226-1)
30970	Cone—Reproducer cone and voice coil (L9)
30969	Reproducer complete
30971	Transformer—Output transformer (T2)
	MISCELLANEOUS ASSEMBLIES
30975	Crystal—Station selector celluloid crystal
14269	Knob—Station selector or volume control knob
30308	Screw—Chassis mounting screw and washer—Package of 4
14270	Spring—Retaining spring for knob

Precautionary Lead Dress

1. Leads on C16 and C20, and lead from R16 to terminal board, must be short. C22 and C4 are soldered direct (no leads).
2. Dress L10 away from chassis. Dress T1 secondary leads (brown and green) away from base and free of other leads (same applies to R17 and C27). Dress T1 secondary midtap (brown-black) free of other leads and close to chassis.
3. Maintain original ground points.
4. Antenna and ground leads 36 inches long, twisted, and arranged as shown in top view.
5. I.F. plate lead (blue) dressed close to and along edge of chassis.

Battery Charger Connections.—The positive side of the 6-volt "A" circuit is connected to the receiver chassis, and the chassis is normally grounded. If the charger has a ground on the negative side, the ground should be removed, or changed to the positive side.

Do not change the length of leads from the receiver to the battery.

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Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

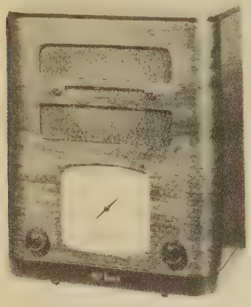
For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Re-sealing I.F. Adjustment Screws.—After completion of alignment, seal the I.F. magnetite-core adjustment screws with a few drops of household cement.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	6K7-G I-F grid cap, in series with .001 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	6A8-G 1st-det. grid cap, in series with .001 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C5* (oscillator) C2 (antenna)

* Adjust C6 on gang condenser to one complete turn from tight, before adjusting C5.



Model 94BT6

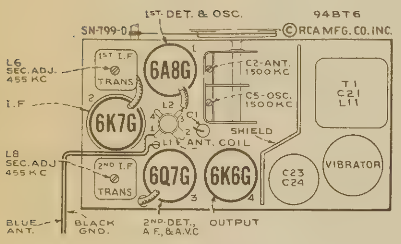


Figure 1—Radiotron and Trimmer Locations

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use the nearest range above the specified measured voltage.)

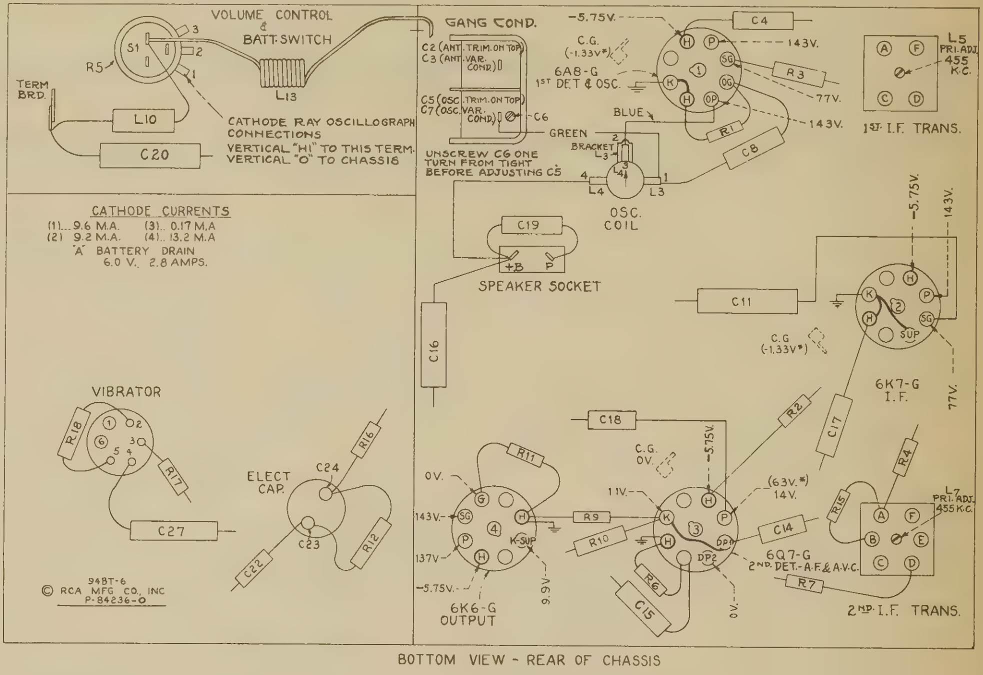


Figure 2—Radiotron Socket Voltages, and Location of Parts

Values should hold within approximately ± 20% with 6 volts "A."

* **Note:** Values with star (*) are operating voltages.

Values not starred are actual measured voltages.

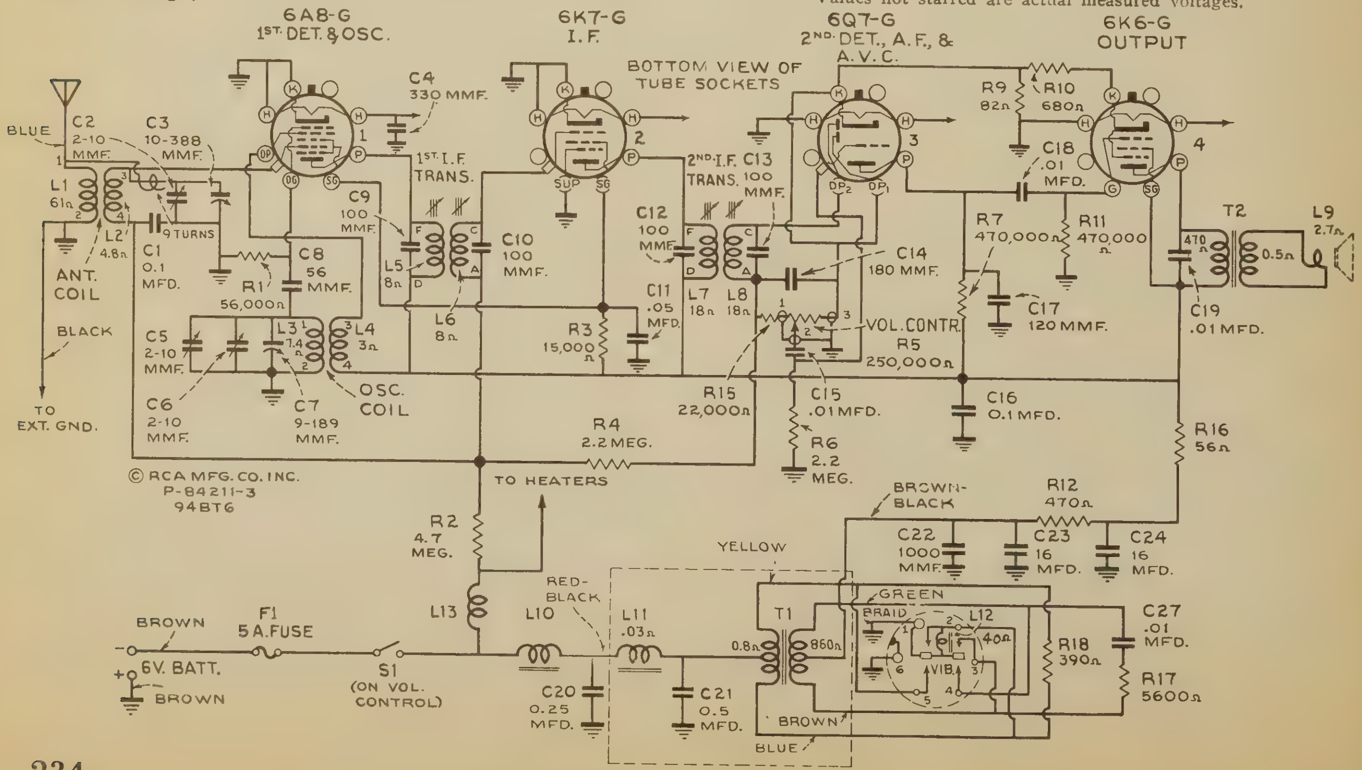


Figure 3—Schematic Circuit Diagram

RCA Victor

MODEL 94BT61

Chassis No. RC-333-C

Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 35—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range........................... 540 to 1,720 kc
R-F Alignment Frequencies.... 600 kc (osc.), 1,500 kc (osc., ant.)
Intermediate Frequency................................ 455 kc

RCA TUBE COMPLEMENT

(1) RCA-6D8-G.................... First Detector—Oscillator
(2) RCA-6S7-G.............................. I-F Amplifier
(3) RCA-6T7-G...................... 2nd Det., A-F., A.V.C.
(4) RCA-6G6-G............................... Power Output

BATTERY REQUIRED	CURRENT CONSUMPTION
6-volt Storage "A" Battery.	At 6 volts, 1.6 amperes.

POWER OUTPUT (6 volts "A")

Undistorted.. 0.45 watt
Maximum .... 0.8 watt

LOUDSPEAKER

Type...................... 5-inch Permanent Magnet Dynamic
Voice-coil Impedance...................... 3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions...............	12⅜ in.	10⅝ in.	6¾ in.
Chassis Base	2 in.	9¾ in.	5⅝ in.

Over-all Chassis Height.................................. 6¾ in.
Weight............................ 11¼ lbs. net, 14 lbs. shipping
Operating Controls...... (1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio...................................... 8 to 1

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30959	Cable—Battery cable complete...............	
30967	Cable—Shielded volume control cable.........	
12581	Cap—Second I.F. transformer shield cap......	
12629	Capacitor—56 mmfd. (C6).................	
12723	Capacitor—56 mmfd. (C21)................	
14262	Capacitor—110 mmfd. (C5)................	
12404	Capacitor—120 mmfd. (C7, C8)............	
12725	Capacitor—150 mmfd. (C13)...............	
14712	Capacitor—180 mmfd. (C10)...............	
13894	Capacitor—390 mmfd. (C4, C27)...........	
30433	Capacitor—430 mmfd. (C25)...............	
14393	Capacitor—.01 mfd. (C11, C12, C15).......	
4937	Capacitor—.01 mfd. (C18)................	
30882	Capacitor—.05 mfd. (C9).................	
30899	Capacitor—0.1 mfd. (C1, C14)............	
30965	Capacitor—0.25 mfd. (C20, C26)..........	
32152	Capacitor—Comprising 2 sections each 15 mfd. (C16, C17)...........................	
30968	Coil—"A" filter choke coil (L12)...........	
30950	Coil—Antenna coil (L1, L2)...............	
32148	Coil—Oscillator coil (L3, L4)..............	
32147	Condenser—2-gang variable tuning condenser (C2, C3, C22, C23, C24)...............	
30877	Cord—Drive cord..........................	
30905	Core—Adjustable core for I.F. transformers...	
14289	Clips—Battery clips—1 marked "+" and 1 unmarked	
32186	Dial—Dial scale, plate, and brackets assembled	
30701	Drum—Tuning condenser drive cord drum with set screw............................	
5140	Fuse—Battery cable fuse (F1)...............	
14635	Indicator—Station selector indicator pointer...	
12848	Resistor—47 ohms, ¼ watt (R14)...........	
8063	Resistor—330 ohms, ½ watt (R11)..........	
30152	Resistor—1,000 ohms, 1 watt (R10).........	
30734	Resistor—5,600 ohms, ½ watt (R12)........	
14284	Resistor—22,000 ohms, 1/10 watt (R5)......	
12454	Resistor—33,000 ohms, ¼ watt (R2).........	
14023	Resistor—82,000 ohms, ¼ watt (R9).........	
14560	Resistor—100,000 ohms, ¼ watt (R1)........	
12285	Resistor—470,000 ohms, ¼ watt (R7, R8)....	
12679	Resistor—2.2 meg., ¼ watt (R3)............	
30271	Resistor—4.7 meg., ¼ watt (R4)............	
13601	Resistor—10 meg., ¼ watt (R13)............	
14887	Retainer—Retainer for knob shaft...........	
30952	Shaft—Station selector knob shaft...........	
3682	Shield—Tube shield........................	
31251	Socket—Tube socket........................	
30956	Socket—Speaker socket.....................	
14312	Socket—Vibrator socket....................	
14191	Spring—Drive cord tension spring...........	
14261	Transformer—First I.F. transformer (L5, L6, C5, C6)................................	
14308	Transformer—Second I.F. transformer (L7, L8, C7, C8, C10, R5)....................	
32151	Transformer—Vibrator transformer (T1, L11 C19)	
14309	Vibrator—Plug in vibrator (L10)...........	
30958	Volume control and on-off switch (R6, S1)....	
	SPEAKER ASSEMBLIES (Speaker 84226-3)	
32163	Cone—Speaker cone and voice coil (L9)......	
32162	Speaker complete..........................	
32164	Transformer—Output transformer (T2).......	
	MISCELLANEOUS ASSEMBLIES	
30975	Crystal—Station selector celluloid crystal.....	
31355	Knob—Tuning or volume control knob.......	
30308	Screw—Chassis mounting screw and washer—4 required............................	
14270	Spring—Retaining spring for knob, Stock No. 31355	

Precautionary Lead Dress

1. Capacitors C20 and C26 must be grounded with as short a lead as possible. C4 and C27 are soldered direct (no leads).

2. The "A" supply choke (L13) must be dressed clear of chassis. The H.V. secondary leads (brown and green), C18, and R12 must be dressed clear of the chassis and away from other leads.

3. The H.V. secondary mid-tap (brown-black) lead, and the brown lead from L13 to 6G6-G filament must be dressed close to the chassis and away from other parts.

4. The lead from the antenna coil (L1 and L2) to the gang must be 9 turns and kept clear of the rotor.

5. The I-F plate lead (blue) must be dressed close along edge of chassis.

6. R10 must be wired with body as close to terminal board as possible.

Battery Charger Connections.—The positive side of the 6-volt "A" circuit is connected to the receiver chassis, and the chassis is normally grounded. If the charger has a ground on the negative side, the ground should be removed, or changed to the positive. Do not change the length of the leads from the receiver to the battery.

Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

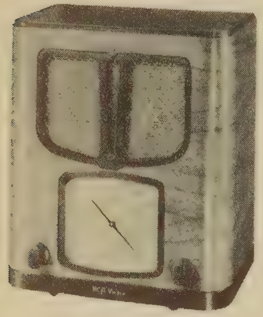
Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

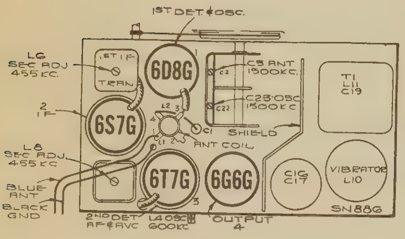
Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	6S7-G I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	6D8-G 1st-det. grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	600 kc	600 kc	L4 (oscillator)
No. 4	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C23† (oscillator) C3 (antenna)

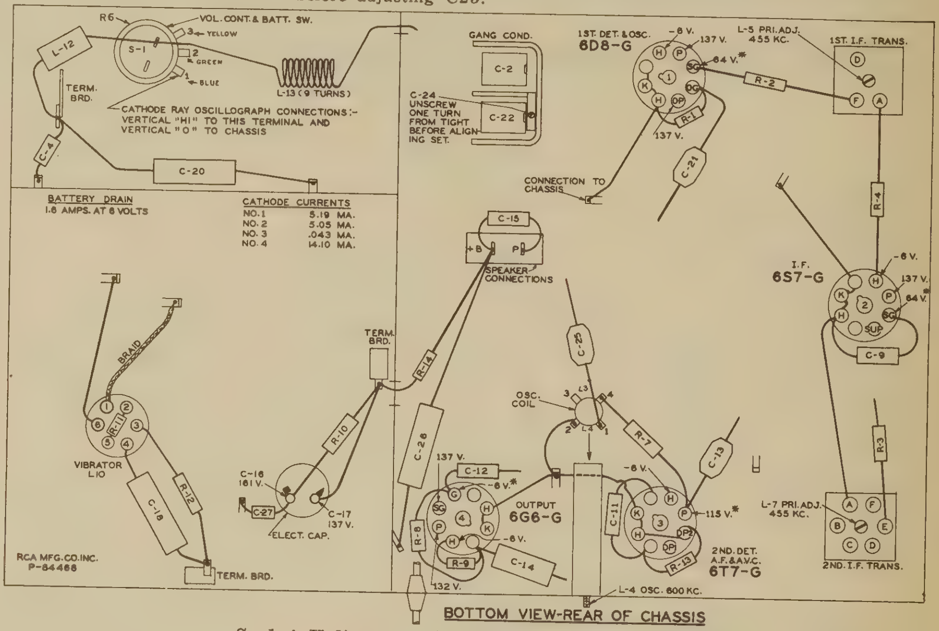
† Adjust C24 on gang condenser to one complete turn from tight before adjusting C23.



Model 94BT61



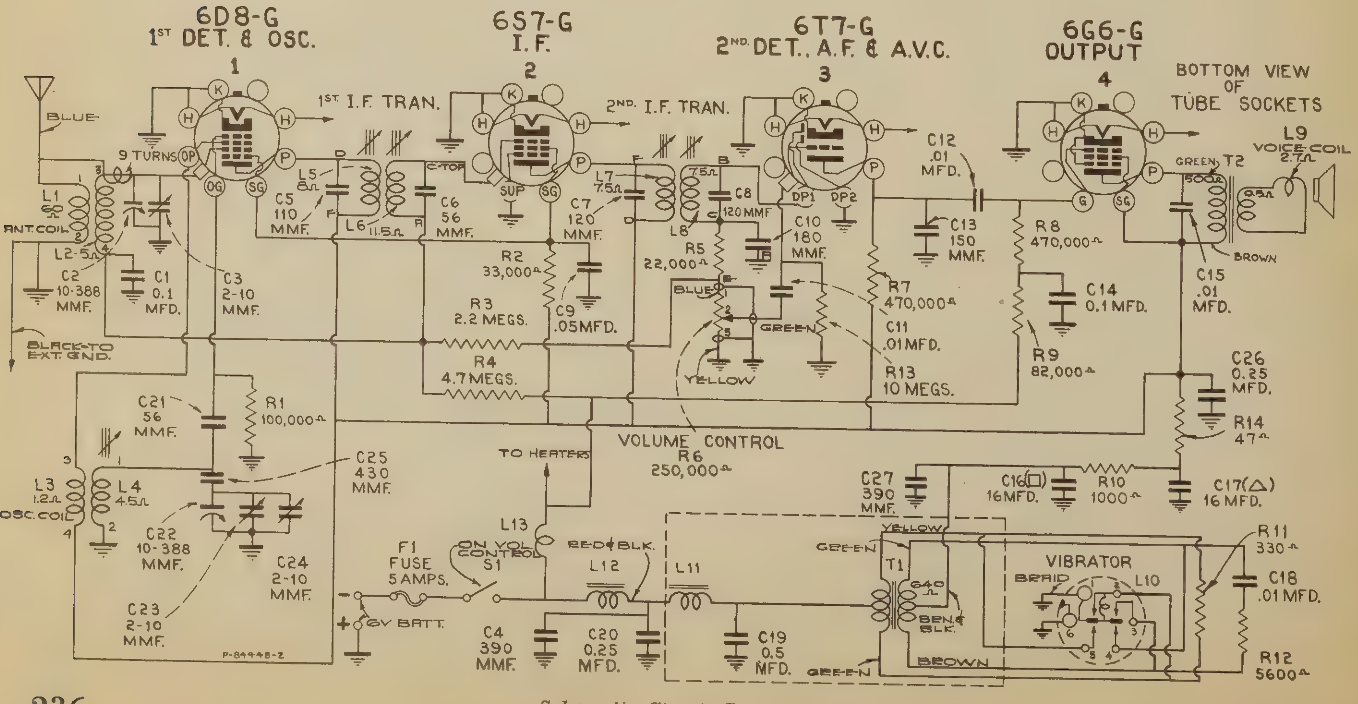
Tube and Trimmer Locations



Socket Voltages and Location of Parts

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with the set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with 6 volts "A."



Schematic Circuit Diagram

RCA Victor

MODELS 96BK6 and 96BT6

Chassis No. RC-392 RC-392

Six-Tube, Electric-Tuning, Two-Band, Battery-Operated, Superheterodyne Receiver

and MODEL CV-9 A-C Power Unit

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 44—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)	540—1,720 kc
Short Wave ("C" Band)	5.8—18 mc
Four Electric Tuning Positions	550—1,500 kc
One station between approximately 550— 950 kc	(Button No. 1)
One station between approximately 610—1,090 kc	(Button No. 2)
One station between approximately 750—1,370 kc	(Button No. 3)
One station between approximately 845—1,500 kc	(Button No. 4)
Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1) RCA-6D8-G	First Detector—Oscillator
(2) RCA-6S7-G	I-F Amplifier
(3) RCA-6T7-G	2nd Detector, A.V.C., and 1st A.F.
(4) RCA-6W7-G	Audio Driver
(5) RCA-6L5-G	Power Output
(6) RCA-6L5-G	Power Output
Pilot Lamp (1)	Mazda No. 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS

With CV-9 a-c power supply unit:
100-130/140-160/195-250 volts, 25-60 cycles, 45 watts

With RS-79B d-c power supply unit:
6.3 volts; total current drain 1.85 amps.

POWER OUTPUT

	Undistorted	Maximum
With a-c power unit	2.2 watts	3.5 watts
With d-c power unit	1.7 watts	2.2 watts

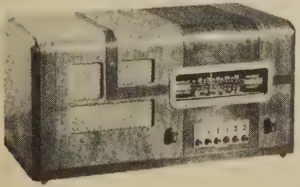
LOUDSPEAKER

Type	Permanent Magnet Dynamic
Voice Coil Impedance	2.2 ohms at 400 cycles
Diameter	96BK6, 8 inches; 96BT6, 6 inches

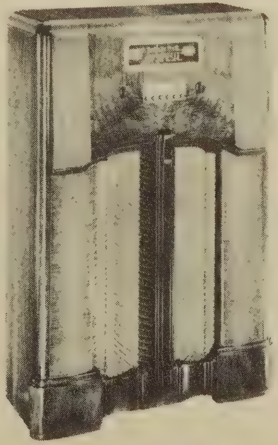
	Model 96BT6	Model 96BK6
Height	10⅝ inches	39½ inches
Width	20⅞ inches	26 inches
Depth	9¾ inches	12¾ inches
Net Weight	17¼ pounds	21 pounds
Shipping Weight	46 pounds	61 pounds
Chassis Base Dimensions	3 inches x 11⅛ inches x 5 inches	
Over-all Height of Chassis		7¾ inches
Tuning Drive Ratio		12 to 1

General Description

The 96BK6 is a console model, the 96BT6 a table model. Each of these receivers is a super-sensitive, six-tube superheterodyne. Design features include gang-tuned push-button coils for single control electric tuning adjustments; magnetite-core i-f transformers and "A" band r-f coils; aurally compensated volume control; push-pull output system with electrical "Magic Voice"; automatic volume control; and permanent magnet dynamic speaker. Push-button electric tuning is provided for four favorite broadcast stations; two additional push-buttons provide dial tuning for "Standard-broadcast" and "Short-wave" bands.



Model 96BT6



Model 96BK6

Power Supply Units

The receiver chassis has a seven-prong male plug for connection to the power-supply unit. Both a-c and d-c power supply units are available, as listed under "Power Supply Ratings." The receivers are shipped with a d-c power unit for use with a 6-volt supply. If an a-c unit is desired, it must be purchased separately as Model CV-9.

If no receiver chassis is available the a-c unit (CV-9) may be tested for proper operation by connecting a 6,500-ohm, 10-watt resistor between terminals 2 and 4 on the cable socket, and shorting terminals 1 and 7. With one voltmeter prod on terminal 2 (ground) the following readings should be obtained: terminal 3, + 200 volts d.c.; terminal 4, + 200 volts d.c.; terminal 5, —5.9 volts d.c.; terminal 6, 6.5 volts a.c. Values should be within ± 20% with rated supply voltage.

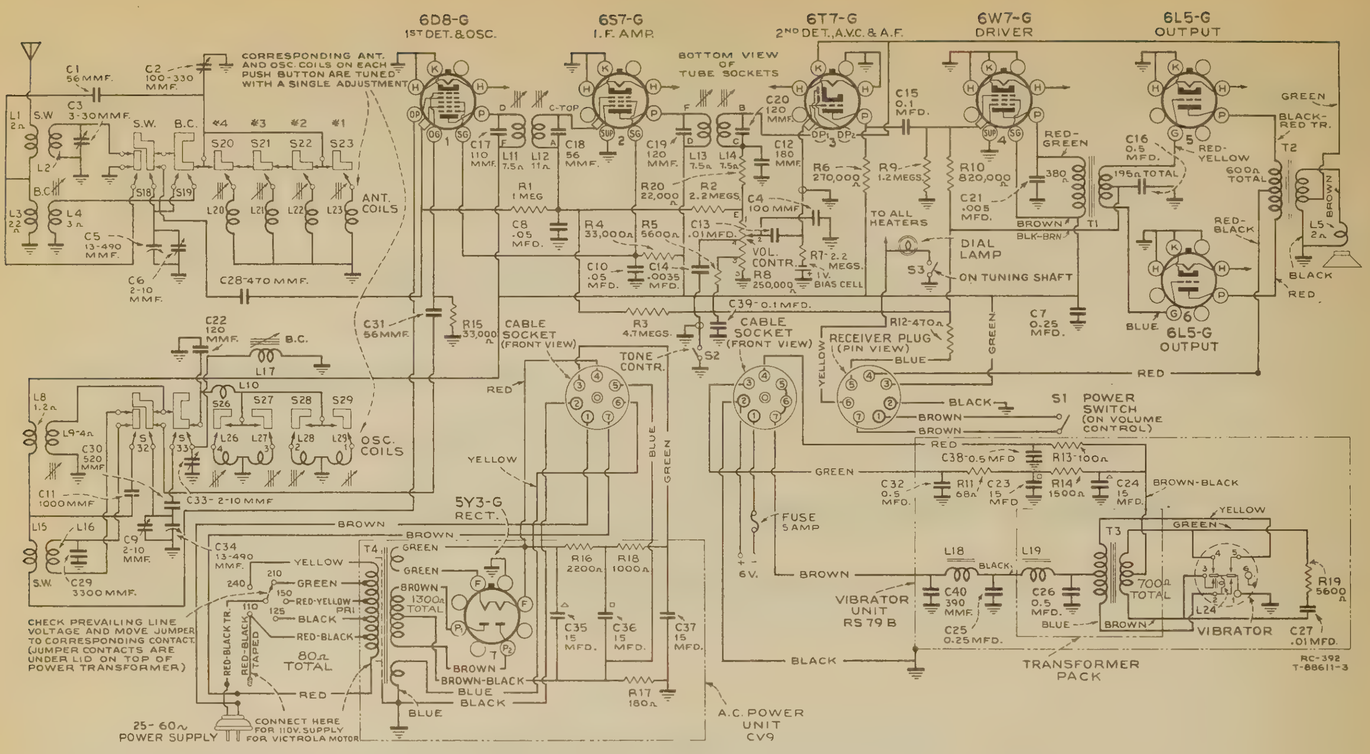
Precautionary Lead Dress.—

1. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.
2. Leads to push button coils must be dressed close to the coils.
3. Red and blue leads to gang condenser must be dressed away from chassis.
4. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.
5. Bias cell must be installed with carbon disc connected to chassis.
6. Leads from power switch to connector plug must be dressed away from other leads.
7. Parts under push button coils must be dressed down away from them.
8. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.

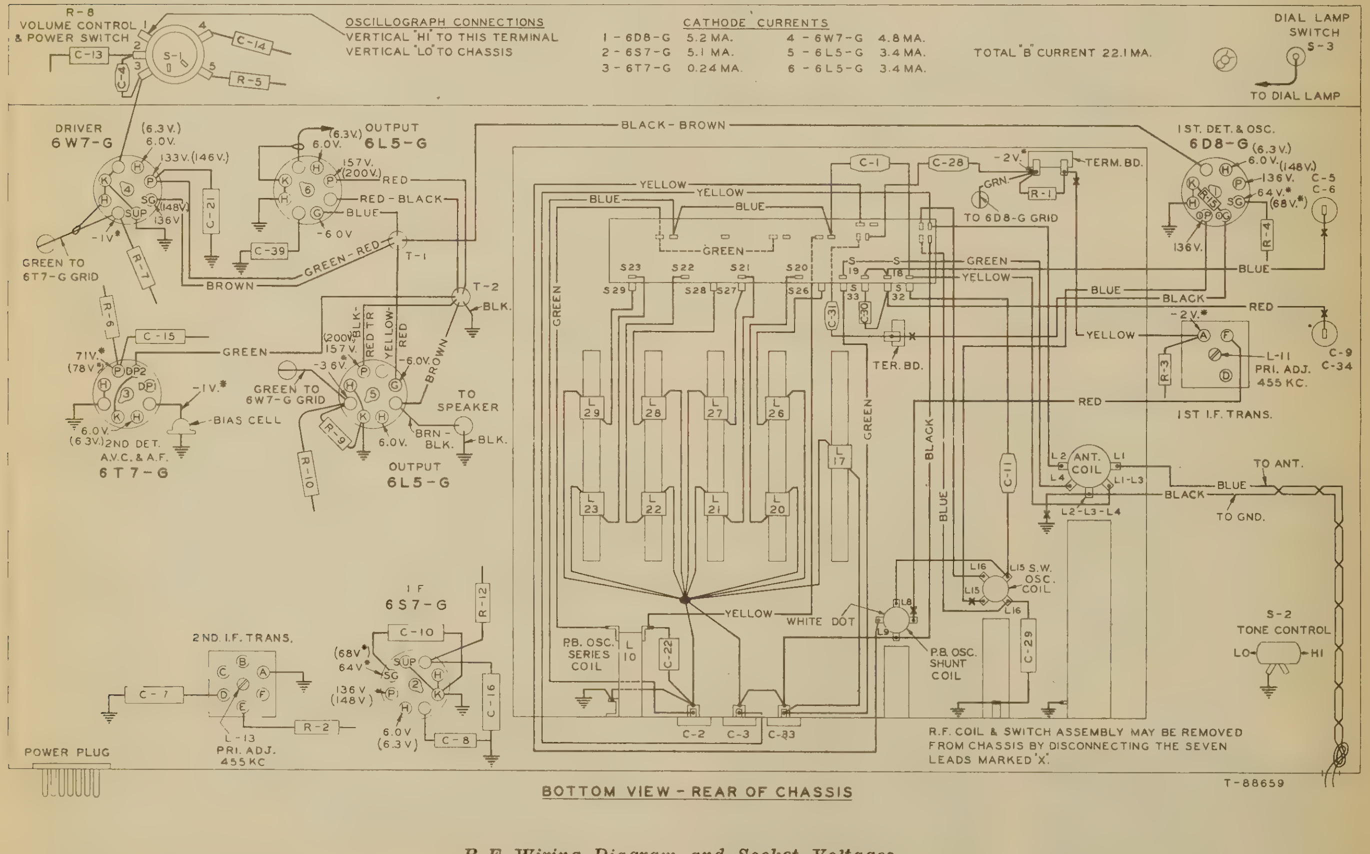
First Edition

Trademark "Magic Voice" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U. S. A.


6D8-G
1ST DET. & OSC.
6S7-G
I.F. AMP.
6T7-G
2ND DET., A.V.C. & A.F.
6W7-G
DRIVER
6L5-G
OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
CORRESPONDING ANT. AND OSC. COILS ON EACH PUSH BUTTON ARE TUNED WITH A SINGLE ADJUSTMENT
ANT. COILS
OSC. COILS
5Y3-G RECT.
CABLE SOCKET (FRONT VIEW)
RECEIVER PLUG (PIN VIEW)
TONE CONTR.
VOL. CONTR.
BIAS CELL
DIAL LAMP
ON TUNING SHAFT
TO ALL HEATERS
S1 POWER SWITCH (ON VOLUME CONTROL)
FUSE 5 AMP
6V.
VIBRATOR UNIT RS 79 B
VIBRATOR
TRANSFORMER PACK
CHECK PREVAILING LINE VOLTAGE AND MOVE JUMPER TO CORRESPONDING CONTACT. (JUMPER CONTACTS ARE UNDER LID ON TOP OF POWER TRANSFORMER)
25-60~ POWER SUPPLY
CONNECT HERE FOR 110V. SUPPLY FOR VICTROLA MOTOR
A.C. POWER UNIT CV9
RC-392
T-88611-3

Schematic Circuit Diagram for Models 96BK6, 96BT6 and CV-9 A-C Power Unit



R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated supply voltage.

* **Note:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured values will be lower, depending on the voltmeter loading.

Bracketed voltages ( ) refer to operation with CV-9 a-c power unit.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

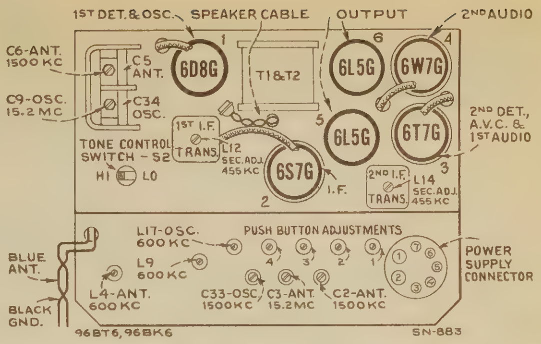
Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



Tube and Trimmer Locations

Steps	Connect the High Side of Test Oscillator to:	Tune Test Oscillator To:	Press Push Button:	Turn Radio Dial to:	Adjust for Maximum Peak Output:
1	6S7-G I-F grid cap in series with .01 mfd.	455 kc	B.C. (No. 5)	No Station Point between 550—750 kc.	L13 and L14 (2nd I-F Trans.)
2	6D8-G Det. grid cap in series with .01 mfd.	455 kc	B.C. (No. 5)		L11 and L12 (1st I-F Trans.)
3	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No. 4 Push Button Adj.) C2 (ant.)
4	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 * (No. 1 Push Button Adj.) L9 (osc.)
5	Repeat steps 3 and 4 until maximum signal is obtained.				
6	Unscrew C9 (osc.) to minimum capacity.				
7	Antenna Lead (blue) in series with 200 mmfd.	600 kc	B.C. (No. 5)	600 kc Calibration Mark	L17 (osc.) ** L4 (ant.)
8	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (No. 5)	1,500 kc Calibration Mark	C33 (osc.) C6 (ant.)
9	Repeat steps 7 and 8 until maximum signal is obtained.				
10	Antenna Lead (blue) in series with 300 ohms	15.2 mc	S.W. (No. 6)	15.2 mc Calibration Mark	C9 (osc.) † C3 (ant.) ††
11	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (No. 5)	1,500 kc Calibration Mark	C33 (osc.)
12	Follow the "Adjustments for Electric Tuning."				

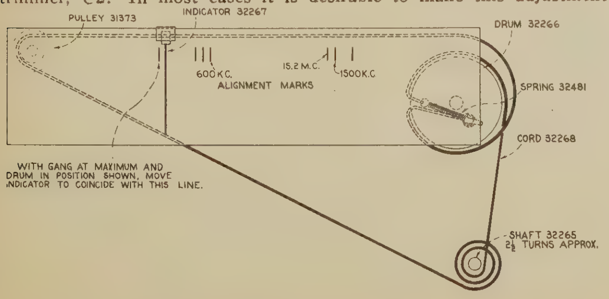
* Adjust L23-L29 (No. 1 push button adjustment) and L9 at the same time, rocking in for maximum signal.

** Turn L17 adjusting screw all the way out, then turn in slowly until a peak is reached. If two peaks can be obtained the lower inductance setting (screw out) should be used.

† Use minimum capacity peak if two peaks can be obtained. A weaker signal (image) should be received about one quarter inch to the left on the dial plate.

†† Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal.

Note: The oscillator tracks 455 kc **above** the signal on all bands. After the receiver has been installed and the antenna connected, it is advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on that particular button.


PULLEY 31373
INDICATOR 32267
DRUM 32266
600 K.C.
15.2 M.C.
1500 K.C.
ALIGNMENT MARKS
SPRING 32481
CORD 32268
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN, MOVE INDICATOR TO COINCIDE WITH THIS LINE.
SHAFT 32265 2½ TURNS APPROX.

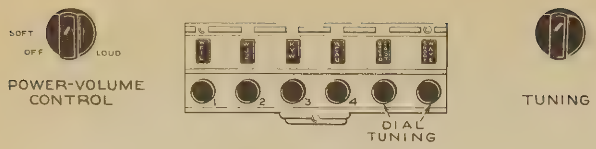
Dial Drive Hookup and Alignment Marks

Adjustment for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screw-driver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use the regular antenna for all adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in note under "Alignment Procedure."



Location of Controls

Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

The push button switch and coil assembly may be removed from the chassis by removing two screws from the front apron, one from the rear apron, removing the 6D8-G grid connector from the grid cap, and disconnecting the seven leads indicated on the Wiring Diagram.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES	
32259	Capacitor—3-section trimmer bank 2-10, 3-30, 100-330 mmfd. (C33, C3, C2)	
12629	Capacitor—56 mmfd. (C18)	
12723	Capacitor—56 mmfd. (C1, C31)	
30406	Capacitor—100 mmfd. (C4)	
14262	Capacitor—110 mmfd. (C17)	
12404	Capacitor—120 mmfd. (C19, C20)	
32370	Capacitor—120 mmfd. (C22)	
14712	Capacitor—180 mmfd. (C12)	
30433	Capacitor—470 mmfd. (C28)	
32269	Capacitor—520 mmfd. (C30)	
12635	Capacitor—1,000 mmfd. (C11)	
4881	Capacitor—3,300 mmfd. (C29)	
30303	Capacitor—.0035 mfd. (C14)	
4838	Capacitor—.005 mfd. (C21)	
14393	Capacitor—.01 mfd. (C13)	
4886	Capacitor—.05 mfd. (C8, C10)	
4839	Capacitor—.1 mfd. (C15, C39)	
30965	Capacitor—.25 mfd. (C7)	
12741	Capacitor—.5 mfd. (C16)	
31581	Cell—1 volt bias cell	
32257	Coil—Push button osc. shunt coil (L8, L9)	
32254	Coil—Broadcast oscillator coil (L17)	
32258	Coil—Antenna coil (L1, L2, L3, L4)	
32366	Coil—"C" band oscillator coil (L15, L16)	
32256	Coil—Push button osc. series coil	
32253	Coil—Push button antenna and oscillator coil (L20, L26)	
32252	Coil—Push button antenna and oscillator coil (L21, L27)	
32251	Coil—Push button antenna and oscillator coil (L22, L28)	
32250	Coil—Push button antenna and oscillator coil (L23, L29)	
32365	Condenser—2-gang variable condenser (C5, C6, C9, C34)	
32369	Contact—Dial lamp spring contact (S3)	
12006	Core—Variable core and stud for I.F. transformers	
12800	Core—Variable core and stud for antenna coil	
32268	Cord—Drive cord	
32266	Drum—Variable condenser drive drum	
31580	Holder—Bias cell holder	
32267	Indicator—Dial scale pointer	
31480	Lamp—Dial lamp	
14404	Plug—7-prong plug—mates with socket on supply cable	
31373	Pulley—Drive cord pulley	
30546	Resistor—470 ohms, ¼ watt (R12)	
13714	Resistor—5,600 ohms, ¼ watt (R5)	
14284	Resistor—22,000 ohms, 1/10 watt (R20)	
12454	Resistor—33,000 ohms, ¼ watt (R4, R15)	
12199	Resistor—270,000 ohms, ¼ watt (R6)	
30963	Resistor—820,000 ohms, ¼ watt (R10)	
13730	Resistor—1 meg., ¼ watt (R1)	
30208	Resistor—1.2 meg., ¼ watt (R9)	
12679	Resistor—2.2 meg., ¼ watt (R2. R7)	
30271	Resistor—4.7 meg., ¼ watt (R3)	
14887	Retainer—Drive cord pulley retaining washer	
32261	Screw—Push button oscillator coil adjustment screw and mounting nut	
3993	Screw—No. 6-32 x ¼ square head set screw for switch collar	
4669	Screw—No. 8-32 square head set screw from drive drum	
32265	Shaft—Tuning knob shaft and retainer	
3682	Shield—Detector tube shield	
3950	Shield—Oscillator tube shield	
31365	Socket—Dial lamp socket	
5119	Socket—3-contact speaker cable socket	
31251	Socket—8-contact tube socket	
32481	Spring—Drive cord tension spring	
32255	Switch—Push button switch (S18, S19, S20, S21. S22, S23, S26, S27, S28, S29, S32, S33)	
30953	Switch—Tone control switch (S2)	
32368	Transformer—Driver and output transformer pack (T1, T2)	
14261	Transformer—First I.F. transformer (L11, L12, C17, C18)	
14308	Transformer—Second I.F. transformer (L13, L14, C12, C19, C20, R20)	
32367	Volume Control and Power Switch (R8, S1)	
	SPEAKER ASSEMBLIES Model 96BT6 (Speaker 84307-3)	
32326	Cone—Speaker cone and voice coil	
5118	Plug—3-prong male plug	
32325	Speaker—Complete	
	SPEAKER ASSEMBLIES Model 96BK6 (Speaker 84477-2)	
32328	Cone—Speaker cone and voice coil	
5118	Plug—3-prong male plug	
32327	Speaker—Complete	
	VIBRATOR POWER UNIT ASSEMBLIES (RS-79B)	
13894	Capacitor—390 mmfd. (C40)	
4937	Capacitor—.01 mfd. (C27)	
12484	Capacitor—.25 mfd. (C25)	
30867	Capacitor—0.5 mfd. (C32, C38)	
32152	Capacitor—Capacitor - 15-15 mfd. Electrolytic (C23, C24)	
14289	Clip—Battery clip for cable	
31794	Coil—Choke coil (L18)	
6516	Connector—Fuse connector	
5140	Fuse—5 ampere	
14281	Resistor—68 ohms, ¼ watt (R11)	
14439	Resistor—100 ohms, ¼ watt (R13)	
3153	Resistor—1,500 ohms, 1 watt (R14)	
30734	Resistor—5,600 ohms, ½ watt (R19)	
4786	Socket—6-prong socket for plug-in vibrator unit	
14409	Socket—7-contact female socket for vibrator cable	
32371	Transformer—Vibrator transformer (T3, L19, C26)	
14309	Vibrator—(L24)	
	A. C. POWER UNIT ASSEMBLIES Model CV-9	
32223	Capacitor—15 mfd. (C37)	
32222	Capacitor—2-sections 15 mfd. each (C35, C36)	
14409	Plug—7-contact female plug for power out cable	
30545	Resistor—180 ohms, ¼ watt (R17)	
4687	Resistor—1,000 ohms, ½ watt (R18)	
13486	Resistor—2,200 ohms, 1 watt (R16)	
31251	Socket—Tube socket	
32221	Transformer—Power transformer 100-130, 140-160, 195-250 volts, 25-60 cycles (T4)	
	MISCELLANEOUS ASSEMBLIES	
32279	Button—Station selector push button	
31935	Clip—Spring clips to hold dial	
32372	Dial—Station selector dial scale	
32277	Escutcheon—Dial bezel and crystal	
32278	Escutcheon—Push button bezel	
31713	Knob—Tuning knob	
31355	Knob—Volume control knob	
32281	Marker—Push button marker for broadcast band	
32280	Marker—Push button marker for short wave band	
32067	Marker—One set station call letter markers	
12993	Screw—Set screw for knob, Stock No. 31713	
14267	Screw—Chassis mounting screw assembly—Model 96BT6 only	
30467	Screw—Chassis mounting screw assembly—Model 96BK6 only	
14270	Spring—Spring for knob, Stock No. 31355	

RCA Victor

MODEL 8M

Five-Tube, Superheterodyne Automobile Receiver

TECHNICAL INFORMATION AND SERVICE DATA

-1938 No. 1-

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

RADIOTRON COMPLEMENT

(1) RCA-6A8-G	First Detector—Oscillator
(2) RCA-6K7-G	I-F Amplifier
(3) RCA-6Q7-G	Second Det., A-F Amp., and A.V.C.
(4) RCA-6K6-G	Power Output
(5) RCA-6X5-G	Full-Wave Rectifier

Tuning Range	550 to 1,550 kc

POWER OUTPUT RATING

Maximum	3.3 watts
Undistorted	1.75 watts

LOUDSPEAKER

Type	5-inch Electrodynamic
Voice-Coil Impedance	3.2 ohms at 400 cycles

POWER SUPPLY RATING

Supply Voltage	6.3 volts
Current Drain	6 amp.
Fuse Protection	15 amp.

PILOT LAMP	Mazda No. 51, 7.5 volts, 0.2 amp.
ALIGNMENT FREQUENCIES	I.F., 460 kc; Oscillator Coil, 1,400 kc; Antenna Coil, 600 kc and 1,400 kc

Mechanical Specifications

RECEIVER CASE DIMENSIONS

Height	5⅞ inches
Width	6 inches
Depth	10⅞ inches

OPERATING CONTROLS	(1) Power Switch—Volume, (2) Tuning
TUNING-DRIVE RATIO	9 to 1
NET WEIGHT	11½ pounds
SHIPPING WEIGHT	13 pounds

General Description

Model 8M is a five-tube superheterodyne receiver with loudspeaker and radio chassis in the same case. The receiver is designed to be mounted under the dash panel. The operating controls are integral with the radio and speaker case. Features of design also include magnetite-core adjusted antenna and i-f transformers; automatic volume control; and ignition-noise-suppression filter in the power-input circuit.

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Vibrator.—The mechanical vibrator used in the power system has a plug-in base for easy removal from the receiver. Its adjustment has been set during manufacture by means of special equipment. In cases of faulty operation a replacement unit should be installed.

Antenna Compensating Capacitor.—Trimmer C2 is accessible from the bottom of the receiver case (near speaker opening) and should be readjusted to give maximum signal output on a weak station or oscillator signal at approximately 1,400 kc, after the instrument is installed. The antenna should be connected to the receiver during this adjustment. Refer to Alignment Table operation number 6.

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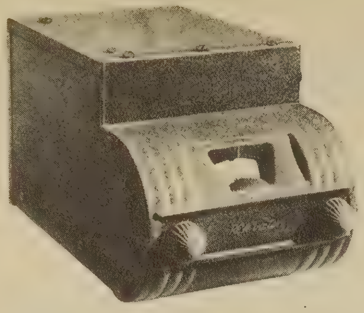

Model 8M

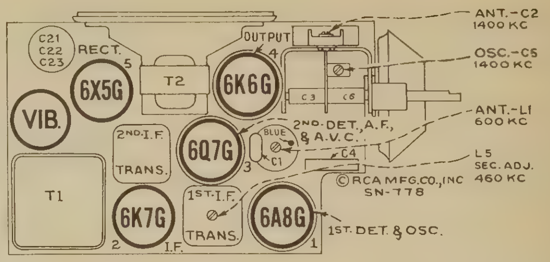

Figure 1—Radiotron, Component Part, and Trimmer Locations

Alignment Procedure

Remove all external screws to remove the chassis from the case. Hold the condenser gang in full-mesh position while rotating the dial scale so the low frequency (end) calibration mark is in line with the pointer. Loosen the three nuts in the front of the scale assembly for this adjustment. When referring to scale settings hold the front panel in place.

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 4.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 3. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Ant. Cable" means test oscillator signal should be applied to the receiver at the connector on the antenna cable extending from the receiver chassis. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Order of Alignment	Test Oscillator			Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	6K7-G I-F Grid Cap	.001 Mfd.	460 kc	No Signal 550-750 kc	2nd I-F Trans.	L6	Max. (peak)
2	6A8-G Det. Osc. Grid Cap	.001 Mfd.	460 kc	No Signal 550-750 kc	1st I-F Trans.	L4 and L5	Max. (peak)
3	Ant. Cable	100 Mmfd.	1,400 kc	1,400 kc	Osc.	C5	Max. (peak)
4	Ant. Cable	100 Mmfd.	1,400 kc	1,400 kc	H-F Ant.	C2	Max. (peak)
5	Ant. Cable	100 Mmfd.	600 kc	Approx. 600 kc *	L-F Ant.	L1	Max. (peak)†
6	Ant. Cable	100 Mmfd.	1,400 kc	1,400 kc	H-F Ant.	C2	Max. (peak)

* Adjust dial for maximum output at or near 600 kc setting.

† The same inductance may be obtained for two different settings of L1. Use either setting.

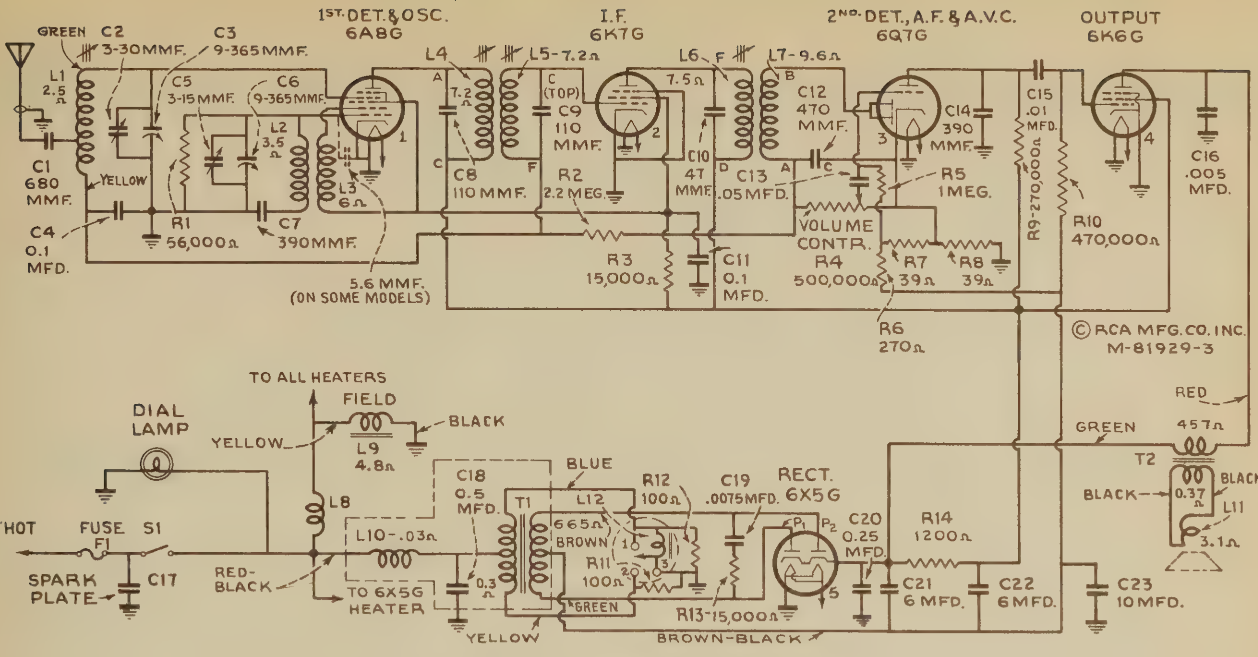

Figure 2—Schematic Circuit Diagram

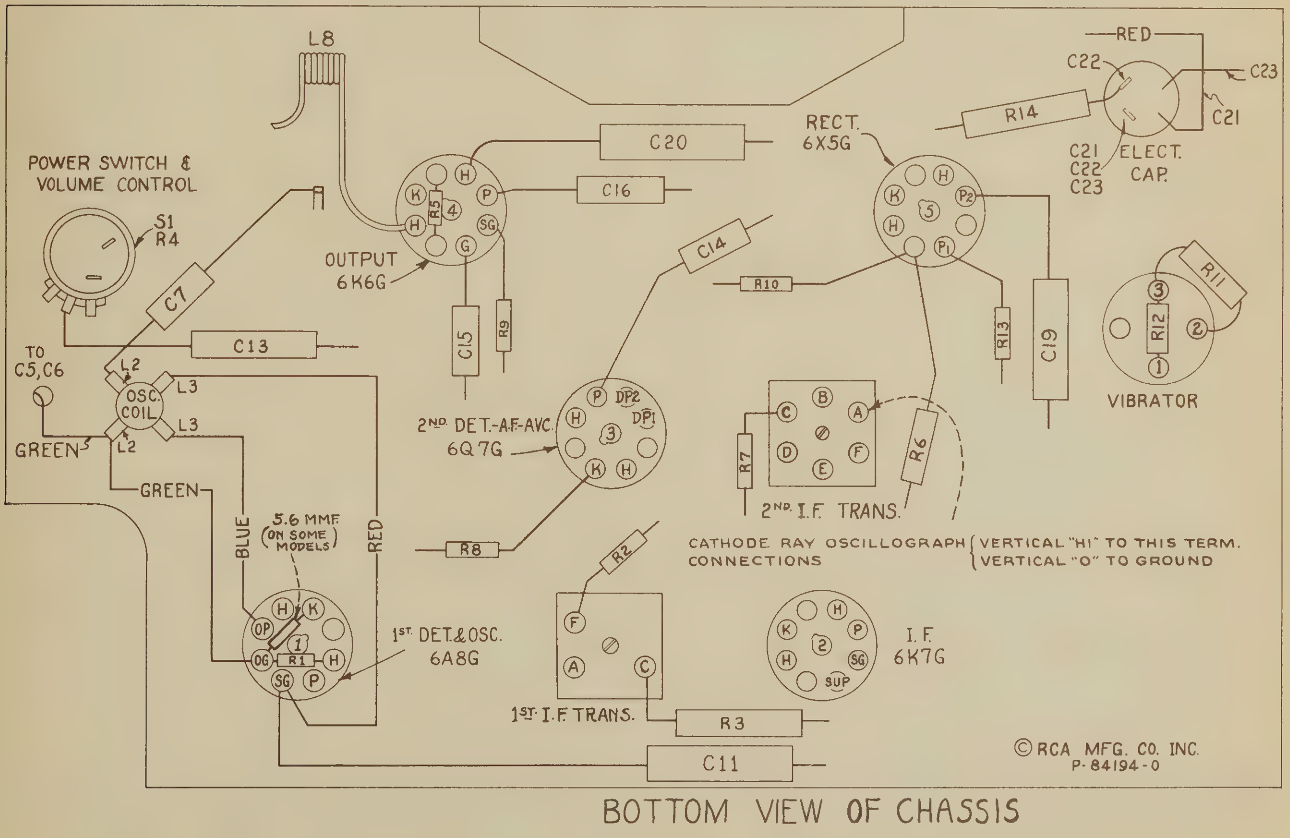

Figure 3—Component Part Locations and R-F Wiring Diagram

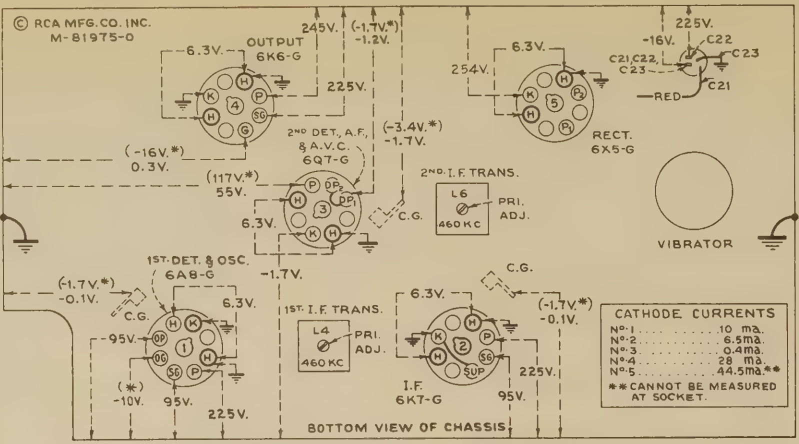

Figure 4—Radiotron Socket Voltages and Trimmer Locations
(Measured at 6.3 volts battery supply—Volume control minimum—No signal input)

***Note:** Two voltage values are shown for some readings. The value shown in parentheses with asterisk (*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter.*

Voltage values as specified should hold within ±20% when the receiver is normally operative at its rated line voltage. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the specified measured voltage. A-c voltages were measured with a corresponding a-c meter.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

Stock No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
11350	Cap—Grid contact cap—Package of 5	
30637	Capacitor—Adjustable trimmer (C2)	
12405	Capacitor—47 Mmfd. (C10)	
14262	Capacitor—110 Mmfd. (C8, C9)	
13894	Capacitor—390 Mmfd. (C14)—Package of 5	
30625	Capacitor—390 Mmfd. (C7)	
30673	Capacitor—470 Mmfd. (C12)	
14498	Capacitor—680 Mmfd. (C1)—Package of 5	
4838	Capacitor—.005 Mfd. (C16)	
30626	Capacitor—.0075 Mfd. (C19)	
14393	Capacitor—.01 Mfd. (C15)	
4886	Capacitor—.05 Mfd. (C13)	
4839	Capacitor—0.1 Mfd. (C4, C11)	
12484	Capacitor—0.25 Mfd. (C20)	
30634	Capacitor Pack—Comprising two 6 Mfd. and one 10 Mfd. sections (C21, C22, C23)	
4358	Clamp—Mounting clamp for capacitor pack, Stock No. 30634	
30639	Coil—Antenna coil—less shield (L1)	
30636	Coil—Oscillator coil (L2, L3)	
30627	Condenser—2-gang variable tuning condenser (C3, C5, C6)	
30632	Cord—Drive cord—Package of 5	
30629	Dial—Dial scale and holder	
30630	Drum—Dial drive drum, complete with set screws	
12415	Resistor—39 ohms, insulated, ¼ watt (R7, R8)—Package of 5	
30540	Resistor—100 ohms, insulated, ½ watt (R11, R12)—Package of 5	
13744	Resistor—270 ohms, carbon type, ½ watt (R6)—Package of 5	
6134	Resistor—1,200 ohms, carbon type, 1 watt (R14)—Package of 5	
12695	Resistor—15,000 ohms, insulated, ¼ watt (R13)—Package of 5	
14166	Resistor—15,000 ohms, carbon type, 2 watt (R3)	
12286	Resistor—56,000 ohms, insulated, ¼ watt (R1)—Package of 5	
12199	Resistor—270,000 ohms, insulated, ¼ watt (R9)—Package of 5	
12285	Resistor—470,000 ohms, insulated, ¼ watt (R10)—Package of 5	
13730	Resistor—1 Megohm, insulated, ¼ watt (R5)—Package of 5	
12679	Resistor—2.2 Megohm, insulated, ¼ watt (R2)—Package of 5	
5129	Ring—Retaining ring for Radiotron shield—Package of 5	
12418	Screw—No. 8-32 x 3/16-in. slab-head set screw for drum, Stock No. 30630—Package of 10	
30638	Shield—Radiotron shield	
13686	Socket—4-contact vibrator socket	
11196	Socket—8-contact Radiotron socket	
30631	Spring—Tension spring for drive cord—Package of 10	
14376	Transformer—First I.F. transformer (L4, L5, C8, C9)	
30672	Transformer—Second I.F. transformer (L6, L7, C10, C12)	
30633	Transformer—Vibrator power transformer (T1, L10, C18)	
13688	Vibrator—Plug-in vibrator (L12)	
30628	Volume Control and "ON-OFF" switch (R4, S1)	
	REPRODUCER ASSEMBLIES (84147-2)	
30782	Cone—Reproducer cone and voice coil (L11)	
30781	Reproducer, complete (L9, L11, T2)	
30783	Transformer—Output transformer (T2)	
	MISCELLANEOUS ASSEMBLIES	
5025	Capacitor—Generator capacitor	
5023	Fuse—15 amp.—Package of 5	
30640	Housing—Receiver case only	
4290	Insulator—Fuse-holder insulating sleeve—Package of 10	
30642	Knob—Tuning or volume control knob—Package of 5	
11765	Lamp—Dial lamp—Package of 5	
7766	Lead—"A" lead (ammeter end), complete with female section of fuse holder	
30641	Lead—"A" lead (chassis end), complete with male section of fuse holder	
30643	Lead—Shielded antenna lead (chassis end), complete with female section of connector	
30645	Mounting—Complete set of brackets, nuts, washers, and screws for mounting receiver	
30644	Socket—Dial lamp socket and lead	
5024	Suppressor—Distributor suppressor	

RCA Victor

MODELS 8M1 and 8M2

Six-Tube, Superheterodyne Automobile Receivers

TECHNICAL INFORMATION AND SERVICE DATA

-1938 No. 2-

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

Radiotron Complement

(1) RCA-6K7-G	R-F Amplifier
(2) RCA-6A8	First Detector—Oscillator
(3) RCA-6K7	I-F Amplifier
(4) RCA-6Q7-G	Second Det., A-F Amp., and A.V.C.
(5) RCA-6K6-G	Power Output
(6) RCA-6X5-G	Full-Wave Rectifier

Tuning Range .... 550 to 1,550 kc

Power Output Ratings

Maximum	3.5 watts
Undistorted	1.75 watts

Loudspeaker

Type	Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

Power Supply Rating

Supply Voltage	6.3 volts
Current Drain	6.6 amperes
Fuse Protection	15 ampere

Pilot Lamp .... Mazda No. 51, 7.5 volts, 0.2 amp.

Alignment Frequencies .... I.F., 260 kc; Oscillator, 600 kc and 1,400 kc; Detector, 1,400 kc; Antenna, 1,400 kc

Mechanical Specifications

Receiver Case Dimensions (all models)	Height, 7 inches; Width, 10 inches; Depth, 7⅛ inches
Speaker Case Dimensions (Model 8M2 only)	Diameter, 9⅝ inches; Depth, 4½ inches
Operating Controls	(1) Power Switch—Volume; (2) Tuning; (3) Tone (8M2 only)
Tuning Drive Ratio	16 to 1
Weight (Model 8M1)	Net, 17 pounds; Shipping, 19 pounds
Weight (Model 8M2)	Net, 19 pounds; Shipping, 23 pounds

General Description

Model 8M1 is a six-tube superheterodyne receiver and a 5-inch electrodynamic loudspeaker in the same case. Model 8M2 employs a similar receiver to Model 8M1 but with an 8-inch electrodynamic loudspeaker separately contained in a cylindrical housing. Other features of design include an r-f amplifier stage; magnetite-core i-f and antenna transformers; automatic volume control; and ignition-suppression filters in both the antenna and power-input circuits. In addition, Model 8M2 has an aural-compensated volume control and continuously variable tone control.

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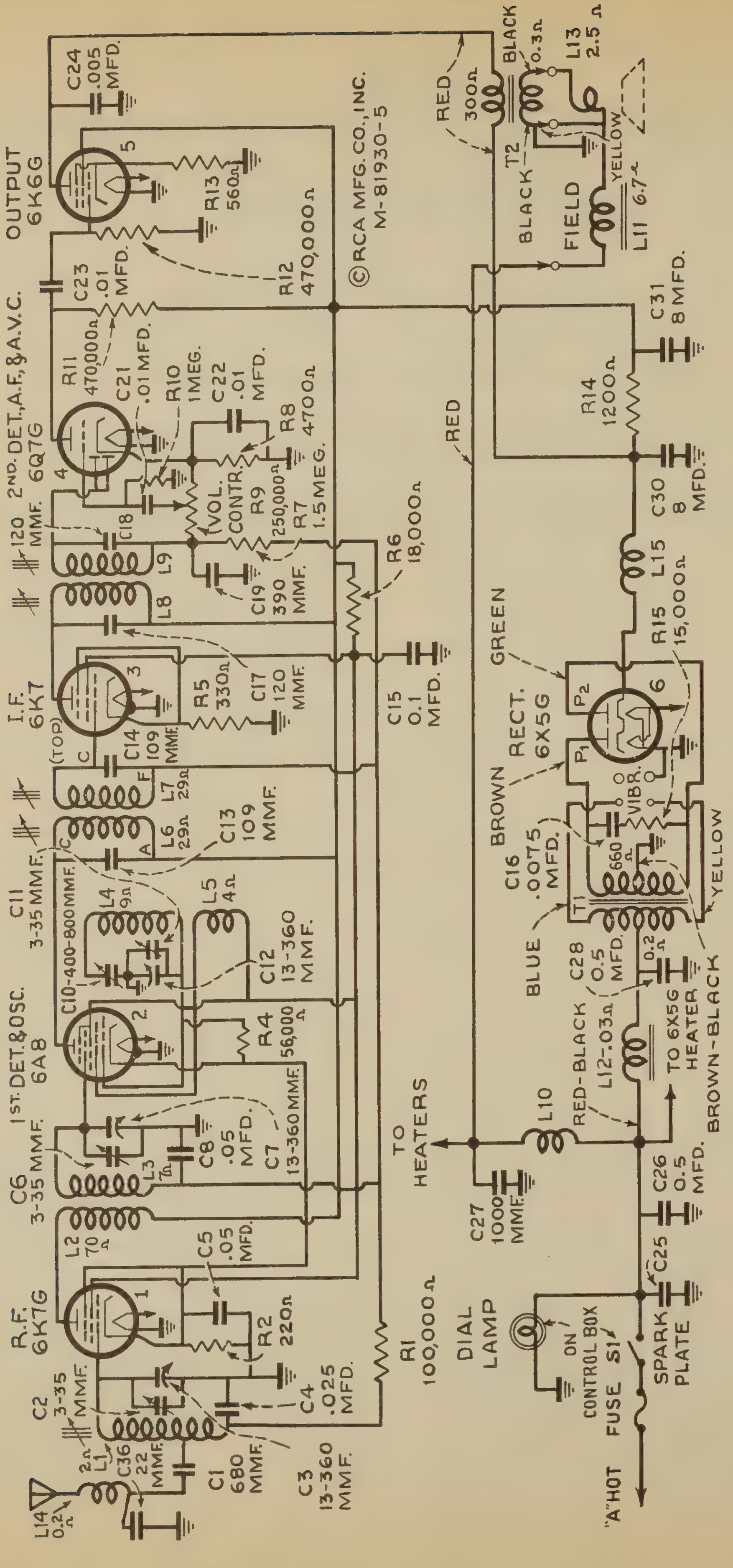

Figure 1—Schematic Circuit Diagram (Model 8M1)

Refer to Figure 3 and Note No. 1 in Replacement Parts list before servicing these receivers.

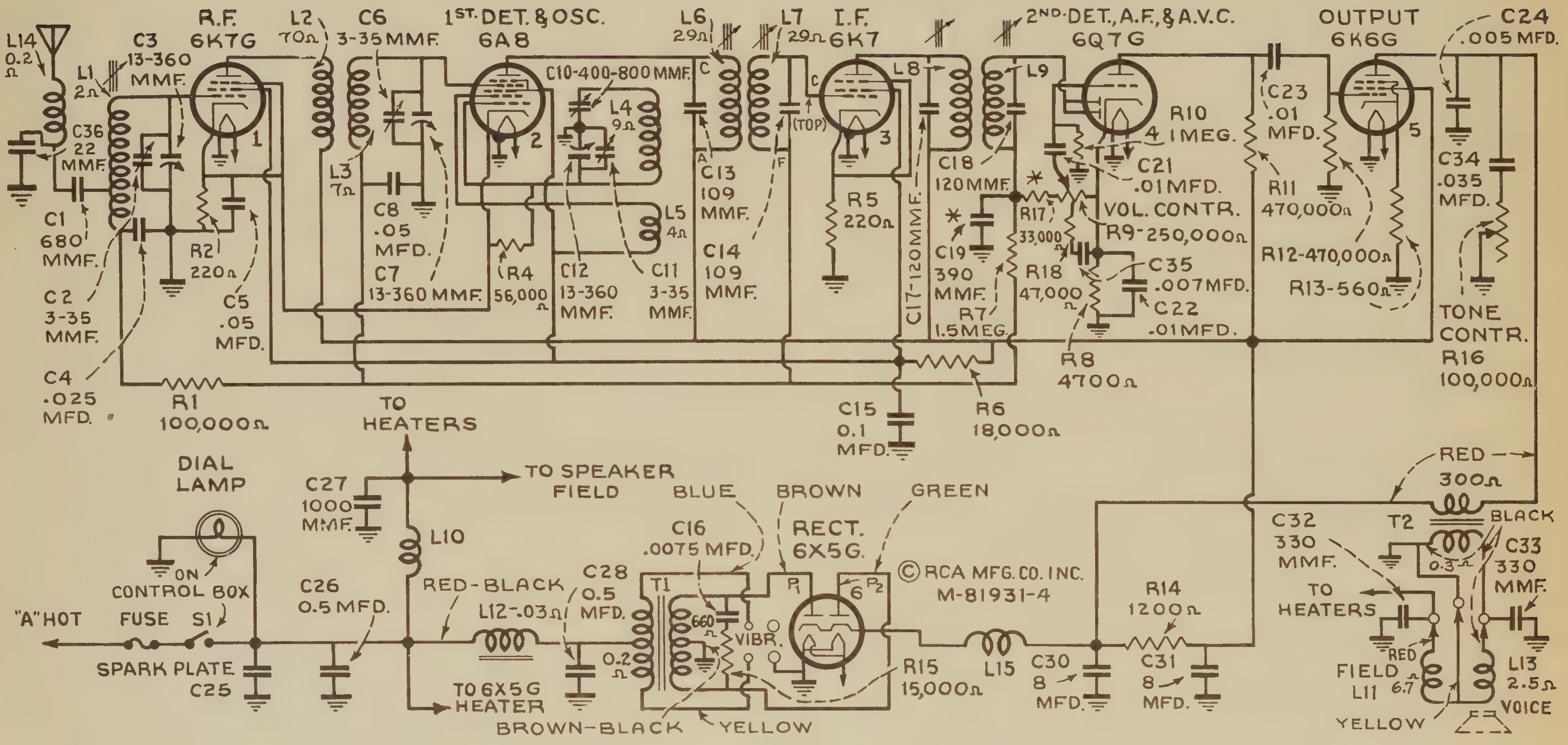

Figure 2—Schematic Circuit Diagram (Model 8M2)

Refer to Figures 4, 5, and 6 and Notes No. 2, 3, and 4 in Replacement Parts list before servicing these receivers.
* R17 is 47,000 ohms and C19 is 265 mmfd. on Model 8M2, Run "B."

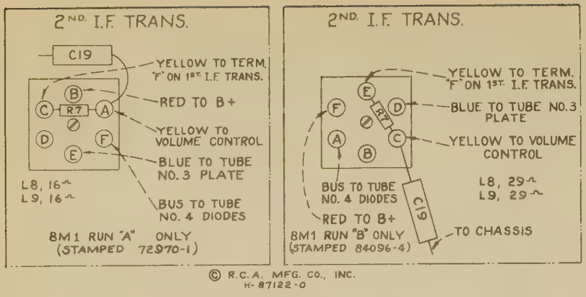

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Figure 3—Second I-F Transformer Connections (Model 8M1)

Refer to Note No. 1 in Replacement Parts list.

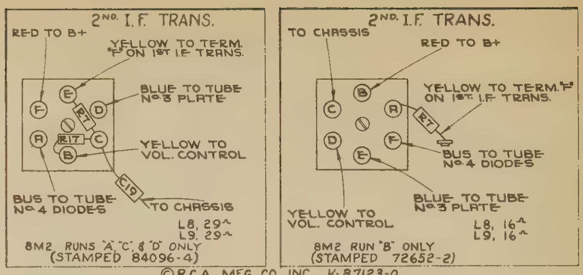

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Figure 4—Second I-F Transformer Connections (Model 8M2)

Refer to Note No. 3 in Replacement Parts list.

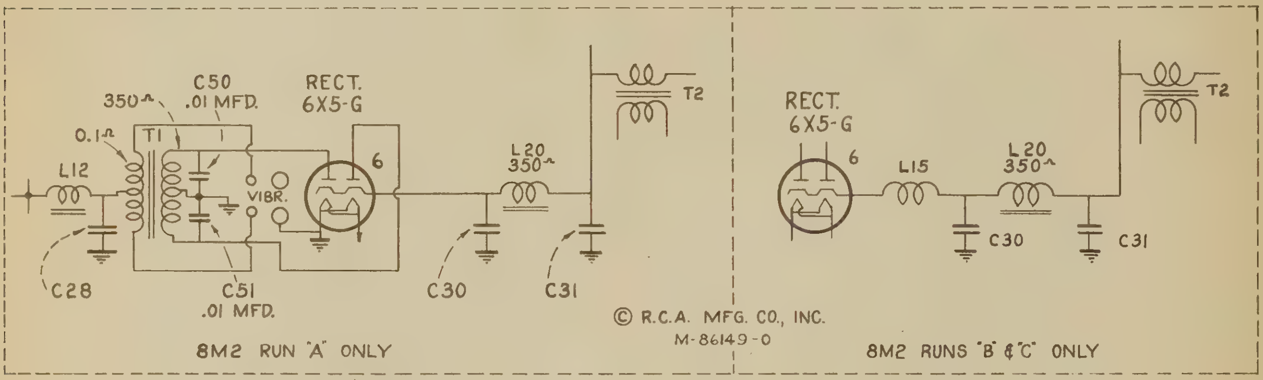

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Figure 5—Schematic Circuit Diagram of Power Unit Modifications (Model 8M2)

Refer to Notes No. 2, 3, and 4 in Replacement Parts list.

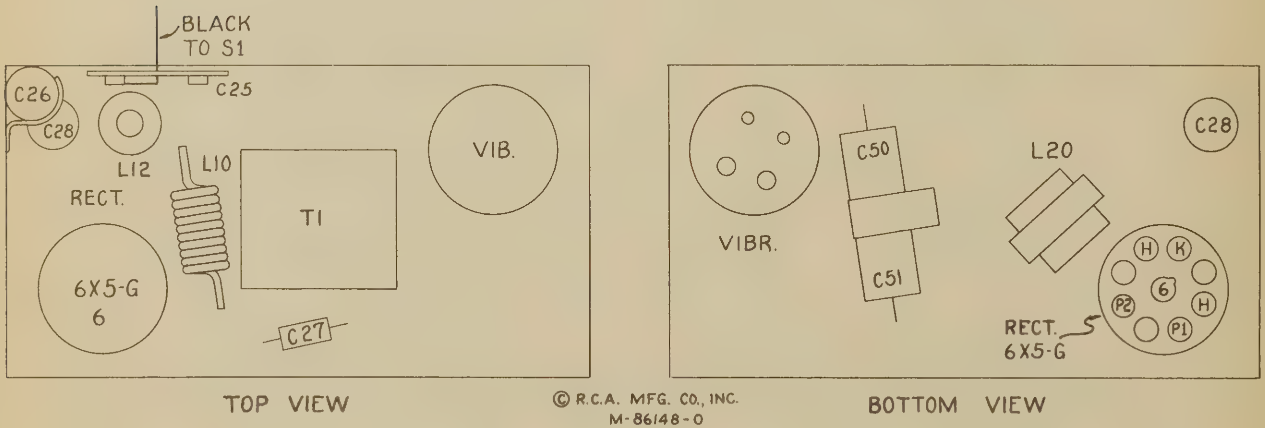

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Figure 6—Parts Location for Power Unit (Model 8M2, Run "A")

Refer to Note No. 2 in Replacement Parts list.

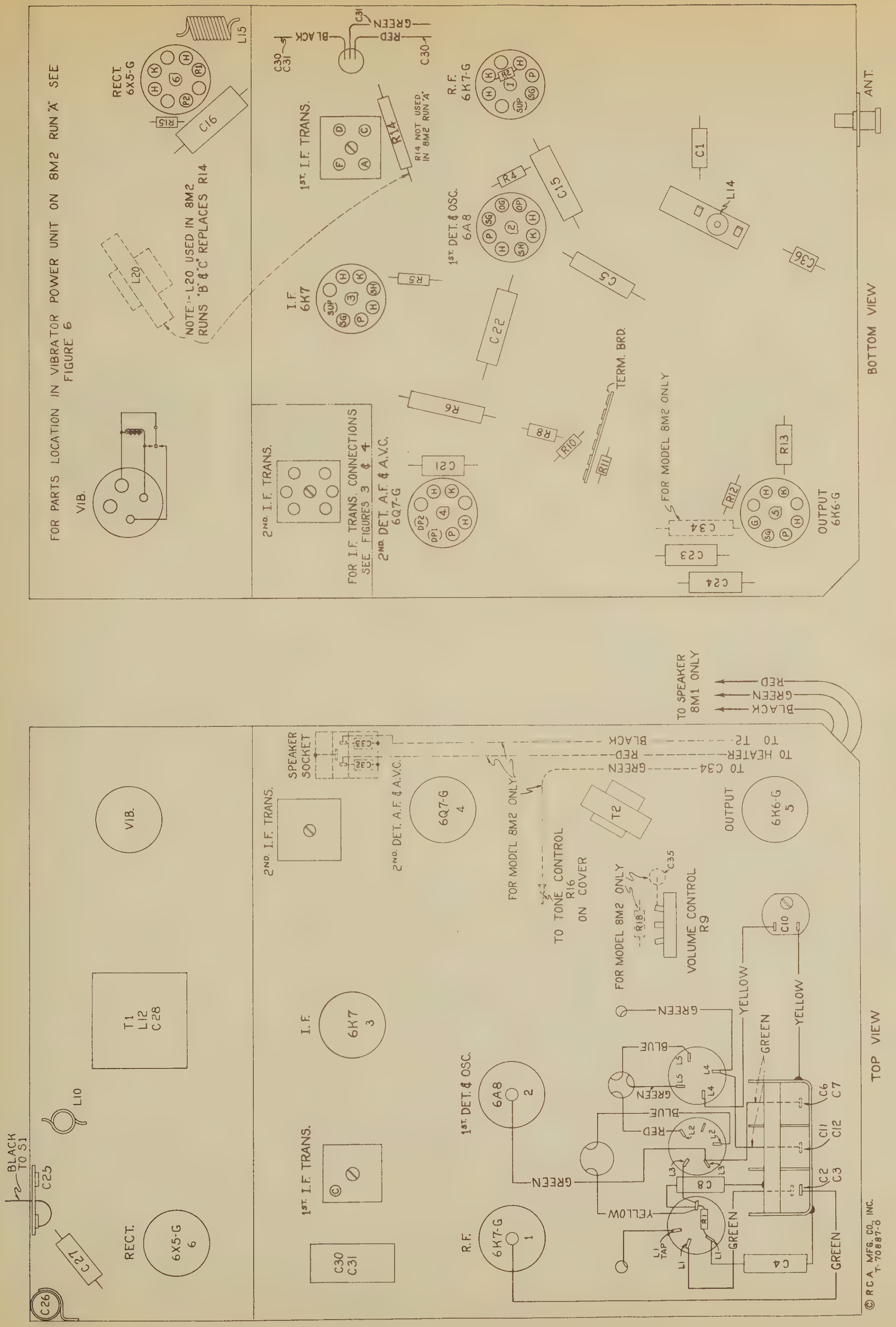


Figure 7—Component Parts Location and R-F Wiring Diagram (Models 8M1 and 8M2)

Refer to Figures 3, 4, and 6 for changes.

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three, narrow, celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. The dust cover should be cemented in place with ambroid upon completion of adjustment.

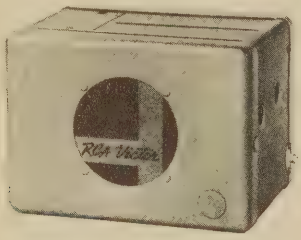
Vibrator.—The mechanical vibrator used in the power system has a plug-in base for easy removal from the receiver. Its adjustments have been set during manufacture by means of special equipment. In cases of faulty operation, a replacement unit should be installed.

Antenna Compensating Capacitor.—Trimmer C2 is accessible by removing the plug button from the front cover of the receiver case.

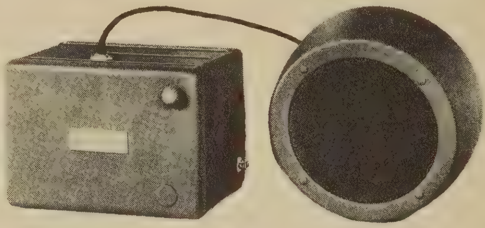
This trimmer must be adjusted for maximum signal output on a weak station near 1,400 kc after installation and with the antenna properly connected.

Dial Pointer Adjustment.—With receiver and control unit properly installed in car, rotate tuning knob to its extreme clockwise position and then to its extreme counter-clockwise position, irrespective of location of pointer on dial. Pull out dial lamp socket from control unit, locate the pointer adjusting screw at bottom of hole and turn with a small screwdriver until the pointer on dial is at the end calibration mark beyond "55" on the dial scale. Final adjustment may be made, if desired, by tuning in a station of known frequency and adjusting dial pointer to the frequency of the station.

Power Switch and Volume Control Adjustment.—Rotate the "Off-On-Volume" control knob to its extreme clockwise position and then back to its extreme counter-clockwise position. This sets the friction-clutch mechanism in proper alignment.



Model 8M1



Model 8M2

Alignment Procedure

Calibrate the tuning-dial pointer to the low-frequency calibration mark as outlined under "Dial Pointer Adjustment."

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 8 and 9.

Cathode-ray alignment is preferable; the connections to the chassis are: Vertical "Hi" to yellow volume-control lead, "0" to chassis. If an output indicator is used, connect it across the loudspeaker voice coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Ant. Conn." means that the test oscillator signal should be applied to the receiver at the antenna connector on side of case. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Order of Alignment	Test Oscillator			Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	6K7 I-F Grid Cap	.001 Mfd.	260 kc	No Signal 550-750 kc	2nd I-F Trans.	L8 and L9	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	260 kc	No Signal 550-750 kc	1st I-F Trans.	L6 and L7	Max. (peak)
3	Ant. Conn.	150 Mmfd.	600 kc	600 kc	L-F Osc.	C10	Max. (peak)
4	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	H-F Osc.	C11	Max. (peak)
5	Ant. Conn.	150 Mmfd.	600 kc	Rock Thru 600 kc	L-F Osc.	C10	Max. (peak)
6	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	H-F Osc.	C11	Max. (peak)
7	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	Det.	C6	Max. (peak)
8	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	Ant.	C2*	Max. (peak)

* Re-adjust C2 after installation as outlined under "Antenna Compensating Capacitor."

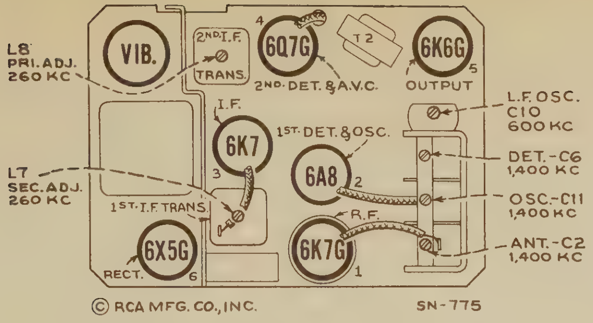


Figure 8—Radiotron and Trimmer Locations
(Models 8M1 and 8M2)

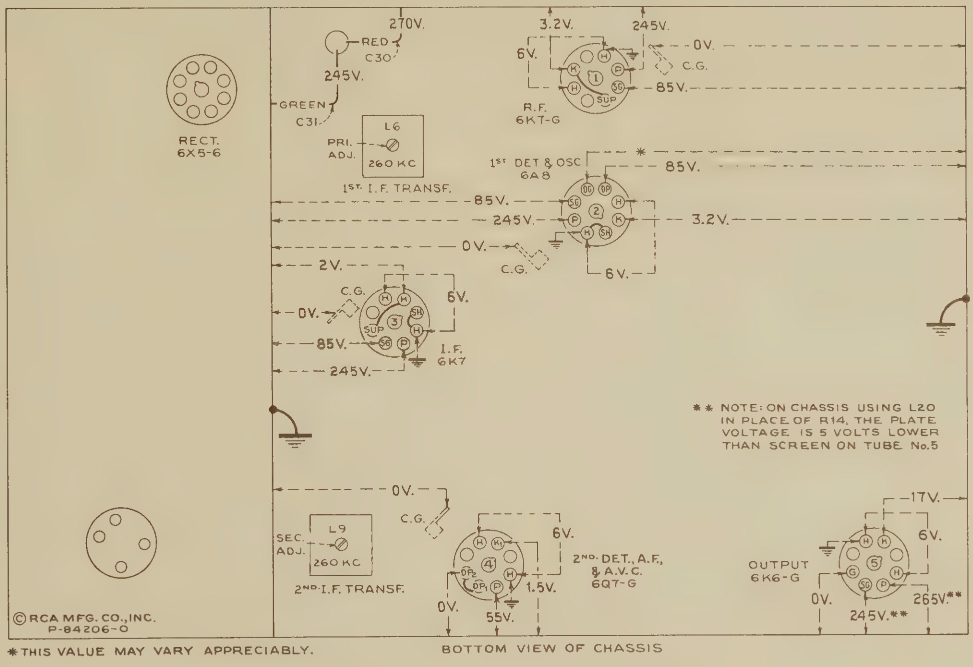


Figure 9—Radiotron Socket Voltages and Trimmer Locations (Models 8M1 and 8M2)
(Measured at 6.3 volts battery supply—Volume control minimum—No signal input)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ±20% when the receiver is normally operative at its rated battery voltage.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

Stock No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
13543	Bracket—Chassis mounting bottom bracket and studs assembly..........................	
11978	Capacitor—Adjustable trimmer (C10)........	
30802	Capacitor—22 Mmfd. (C36).................	
14262	Capacitor—109 Mmfd. (C13, C14)..........	
* 12404	Capacitor—120 Mmfd. (C17, C18)..........	
12952	Capacitor—330 Mmfd. (C32, C33)—Model 8M2 only	
* 13894	Capacitor—390 Mmfd. (C19)...............	
14498	Capacitor—680 Mmfd. (C1)................	
30800	Capacitor—1,000 Mmfd. (C27).............	
4838	Capacitor—.005 Mfd. (C24)................	
5148	Capacitor—.007 Mfd. (C35)—Model 8M2 only..	
* 30626	Capacitor—.0075 Mfd. (C16)...............	
14393	Capacitor—.01 Mfd. (C21)..................	
4858	Capacitor—.01 Mfd. (C22, C23)............	
4870	Capacitor—.025 Mfd. (C4).................	
5196	Capacitor—.035 Mfd. (C34)—Model 8M2 only..	
4886	Capacitor—.05 Mfd. (C5, C8)..............	
4839	Capacitor—0.1 Mfd. (C15).................	
30797	Capacitor Pack—Comprising two sections each 8 Mfd. (C30, C31).....................	
30793	Coil—Antenna coil and shield (L1).........	
30792	Coil—Oscillator coil—less shield (L4, L5)....	
30794	Coil—R.F. coil—less shield (L2, L3)........	
30790	Condenser—3-gang variable tuning condenser (C2, C3, C6, C7, C11, C12)...........	
12006	Core—Adjustable core and stud for I.F. transformers	

REPLACEMENT PARTS (Continued)

Stock No.	DESCRIPTION	
12882	Core—Adjustable core and stud for antenna coil	
30798	Coupling—Tuning condenser flexible shaft insulating coupling	
13691	Filter—Antenna filter (L14)	
30791	Gear—Large gear located on shaft of tuning condenser	
13694	Guide—Volume control flexible shaft guide	
30801	Pin—Contact pin for tone control lead	
14561	Resistor—220 ohms, insulated, ¼ watt (R2, R5)—(R5 in Model 8M2 only)	
30538	Resistor—330 ohms, insulated, ¼ watt (R5)—Model 8M1 only	
5164	Resistor—560 ohms, carbon type ¼ watt (R13)	
* 6134	Resistor—1,200 ohms, carbon type, 1 watt (R14)	
30146	Resistor—4,700 ohms, insulated, ¼ watt (R8)	
* 12695	Resistor—15,000 ohms, insulated, ¼ watt (R15)	
11671	Resistor—18,000 ohms, carbon type, 2 watt (R6)	
* 12454	Resistor—33,000 ohms, insulated, ¼ watt (R17)—Model 8M2 only	
12412	Resistor—47,000 ohms, insulated, ¼ watt (R18)—Model 8M2 only	
12286	Resistor—56,000 ohms, insulated, ¼ watt (R4)	
11281	Resistor—100,000 ohms, insulated, 1/10 watt (R1)	
12285	Resistor—470,000 ohms, insulated, ¼ watt (R11, R12)	
13730	Resistor—1 Meg., insulated, ¼ watt (R10)	
12201	Resistor—1.5 Meg., insulated, ¼ watt (R7)	
3584	Ring—Retaining ring for R.F. coil shield	
5129	Ring—Retaining ring for Radiotron shield	
13472	Ring—Retaining ring for oscillator coil shield	
13471	Ring—Retaining ring for antenna coil shield	
12218	Shield—Radiotron shield	
13686	Socket—4-contact vibrator socket	
11196	Socket—8-contact Radiotron socket	
12007	Spring—Retaining spring for core Stock Nos. 12882 or 12006	
30796	Transformer—First I-F transformer (L6, L7, C13, C14)	
* 30483	Transformer—Second I-F transformer (L8, L9, C17, C18) (this unit stamped 84096-4)	
30795	Transformer—Output transformer (T2)	
* 30799	Transformer—Vibrator power transformer (T1, L12, C28)	
13688	Vibrator—Plug-in vibrator	
13420	Volume Control—Model 8M1 only (R9)	
12365	Volume Control—Model 8M2 only (R9)	
	REPRODUCER ASSEMBLIES (84173-4) **Model 8M1**	
30804	Cone—Reproducer cone and voice coil (L13)	
30803	Reproducer—Complete (L11, L13)	
	REPRODUCER ASSEMBLIES (84189-2) **Model 8M2**	
30806	Cable—3-conductor shielded speaker cable complete with male plug	
30808	Cone—Reproducer cone and voice coil (L13)	
30805	Housing—Reproducer housing complete, less speaker unit and cable	
30807	Reproducer—Speaker unit only—less case, cable, and mounting parts (L11, L13)	
	CONTROL BOX ASSEMBLIES **Models 8M1 and 8M2**	
30817	Cord—Dial drive cord—25 ft. length only	
30820	Cover—Cover shell and spring used on control shafts, beneath knobs	
30818	Dial—Round etched glass dial	
30813	Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel, and cord assembled—less dial lamp and dial lamp socket	
30819	Indicator—Indicator pointer disc	
11765	Lamp—Dial lamp	
30816	Socket—Dial lamp socket and lead	
30814	Tuning Unit—Comprising knob shaft, bearing, and gear case—less knob	
30815	Volume Unit—Comprising knob shaft, bearing, and on-off switch—less knob	
	Note—Knobs, escutcheon, and mounting parts are included in kits to be supplied by dealer for particular car in which installation is to be made.	
	MISCELLANEOUS ASSEMBLIES	
4293	Capacitor—Ammeter capacitor	
5025	Capacitor—Generator capacitor	
13109	Capacitor—0.5 Mfd. (C26)	
5023	Fuse—15 ampere	

Stock No.	DESCRIPTION	
30809	Housing—Receiver case—less speaker screen—Model 8M1 only	
30810	Housing—Receiver case—Model 8M2 only	
4290	Insulator—Fuse holder insulating sleeve	
30642	Knob—Tone control knob—Model 8M2 only	
7766	Lead—"A" lead—ammeter end—complete with female section of fuse holder	
12445	Lead—"A" lead—chassis end—complete with male section of connector	
13708	Lead—Antenna lead-in, approx. 36 in. long complete with 2 male sections of connector	
30811	Shaft—Flexible shaft for tuning control—approx. 25⅛ in. long	
13926	Shaft—Flexible shaft for volume control—approx. 25⅛ in. long	
12502	Socket—Pin-socket and bracket assembly for tone control lead—Model 8M2 only	
12248	Socket—3-contact socket and bracket for speaker cable—Model 8M2 only	
12254	Stud—Speaker mounting stud assembly for Model 8M2	
12448	Stud—Receiver mounting stud, washer and nut assembly	
5024	Suppressor—Distributor suppressor	
12249	Tone control—Model 8M2 only	
	*** MISCELLANEOUS SUBSTITUTE PARTS**	
	NOTE No. 1—MODEL 8M1 (Run "A")	
	A portion of these receivers were constructed with a second i-f transformer different from that listed above. Such receivers may be identified by letter "A" preceding the code stamped on the chassis partition (e. g. "A7M20" etc.) and also by reference to figure 3. For replacements in such receivers, do not use i-f transformer Stock No. 30483 or capacitor (C17 and C18) Stock No. 12404 listed above. Instead use:	
30407	Capacitor—115 Mmfd. (C17 and C18)	
13693	Transformer—Second I-F transformer (L8, L9, C17, C18) (this unit stamped 72970-1)	
	NOTE No. 2—MODEL 8M2 (Run "A")	
	A portion of these receivers were constructed with a vibrator transformer different from that listed above. Such receivers may be identified by letter "A" preceding the code stamped on the chassis partition (e. g. "A7M20" etc.) and also by presence of two additional and separate choke coils (L12 and L20). Refer to figures 5 and 6. For replacements in such receivers, do not use vibrator transformer Stock No. 30799; capacitor (C16) Stock No. 30626; resistor (R14) Stock No. 6134; or resistor (R15) Stock No. 12695. Instead use:	
13695	Capacitor—2 sections, each .01 Mfd. (C50, C51)	
5019	Capacitor—0.5 Mfd. (C28)	
30255	Coil—"A" filter choke coil (L12)	
13696	Coil—"B" choke coil (L20)	
13690	Transformer—Vibrator power transformer (T1)	
	NOTE No. 3—MODEL 8M2 (Run "B")	
	A portion of these receivers were constructed with a second i.f. transformer different from that listed above, and the substitution of a "B" choke coil in place of resistor (R14). Such receivers may be identified by letter "B" preceding the code stamped on the chassis partition (e. g. "B7M20" etc.) and by the presence of an iron core "B" choke coil (L20) in the power unit section. Refer to figures 4 and 5. For replacements in such receivers, do not use resistor (R14) Stock No. 6134; i-f transformer Stock No. 30483; capacitor (C17, C18) Stock No. 12404; resistor (R17) Stock No. 12454; or capacitor (C19) Stock No. 13894. Instead use:	
30407	Capacitor—115 Mmfd. (C17, C18)	
12761	Capacitor—265 Mmfd. (C19)	
13696	Coil—"B" choke coil (L20)	
5132	Resistor—47,000 ohms, carbon type, 1/10 watt (R17)	
12229	Transformer—Second I-F transformer (L8, L9, C17, C18, C19, R17) (this unit stamped 72652-2)	
	NOTE No. 4—MODEL 8M2 (Run "C")	
	A portion of these receivers were constructed with an iron core "B" choke coil (L20) instead of resistor (R14). Such receivers may be identified by letter "C" preceding the code stamped on the chassis partition (e. g. "C7M20" etc.). Refer to figure 5. For replacements in such receivers, do not use resistor (R14) Stock No. 6134. Instead use:	
13696	Coil—"B" choke coil (L20)	

RCA Victor

MODELS 8M3 and 8M4

Six-Tube, Superheterodyne Automobile Receivers

TECHNICAL INFORMATION AND SERVICE DATA

-1938 No. 3-

SERVICE DIVISION • RCA MANUFACTURING COMPANY INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

RADIOTRON COMPLEMENT

(1) RCA-6K7-G	R-F Amplifier
(2) RCA-6A8	First Detector—Oscillator
(3) RCA-6K7	I-F Amplifier
(4) RCA-6R7-G	Second Det., A-F Amp., and A.V.C.
(5) RCA-6J5	Audio Driver
(6) RCA-6N7-G	Push-Pull Power Output

TUNING RANGE	550 to 1,550 kc

POWER OUTPUT RATINGS

Maximum	9 watts
Undistorted	6 watts

LOUDSPEAKER

Type	Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

POWER SUPPLY RATING

Supply Voltage	6.3 volts
Current Drain	7.5 amperes
Fuse Protection	15 ampere

PILOT LAMP	Mazda No. 51, 7.5 volts, 0.2 ampere
ALIGNMENT FREQUENCIES	I.F., 260 kc; Oscillator, 600 kc and 1,400 kc; Detector, 1,400 kc; Antenna, 1,400 kc

Mechanical Specifications

RECEIVER CASE DIMENSIONS (ALL MODELS)	Height, 7 inches; Width, 10 inches; Depth, 7⅛ inches
SPEAKER CASE DIMENSIONS (MODEL 8M4 ONLY)	Diameter, 9⅝ inches; Depth, 5 inches

OPERATING CONTROLS

Model 8M3	(1) Power Switch—Volume; (2) Tuning; (3) H-F Tone (on receiver case)
Model 8M4	(1) Power Switch—Volume; (2) H-F Tone; (3) Tuning; (4) Sensitivity

TUNING DRIVE RATIO	16 to 1
WEIGHT (MODEL 8M3)	Net, 21 pounds; Shipping, 24½ pounds
WEIGHT (MODEL 8M4)	Net, 26 pounds; Shipping, 31 pounds

General Description

Model 8M3 consists of a six-tube, superheterodyne automobile receiver and a six-inch electrodynamic loudspeaker contained in the same housing. Design features include an r-f amplifier stage; magnetite core i-f and antenna transformers; automatic volume control; continuously variable high-frequency tone control; aural-compensated volume control; ignition-suppression filters in both the antenna and power-input circuits; and a resistance-capacitance coupled audio-driver stage feeding into a push-pull, class-B, power-output stage.

Model 8M4 employs a similar chassis to Model 8M3 but with an eight-inch electrodynamic loudspeaker separately contained in a cylindrical housing. In addition, a sensitivity control is incorporated which permits the listener to alter the receiver sensitivity to suit reception conditions. Model 8M3 has a socket on the receiver case for plugging-in an auxiliary speaker, if desired.

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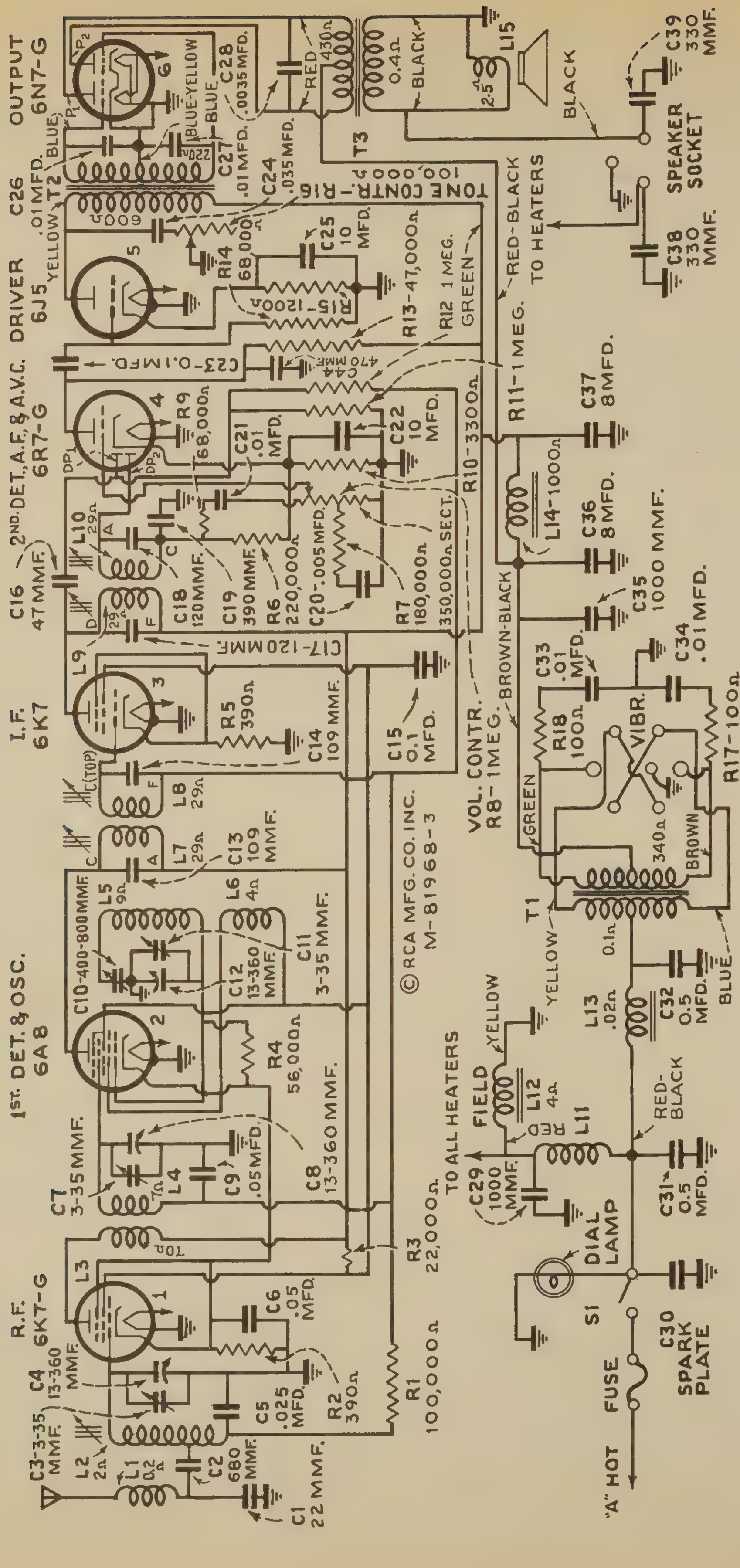


Figure 1—Schematic Circuit Diagram (Model 8M3)

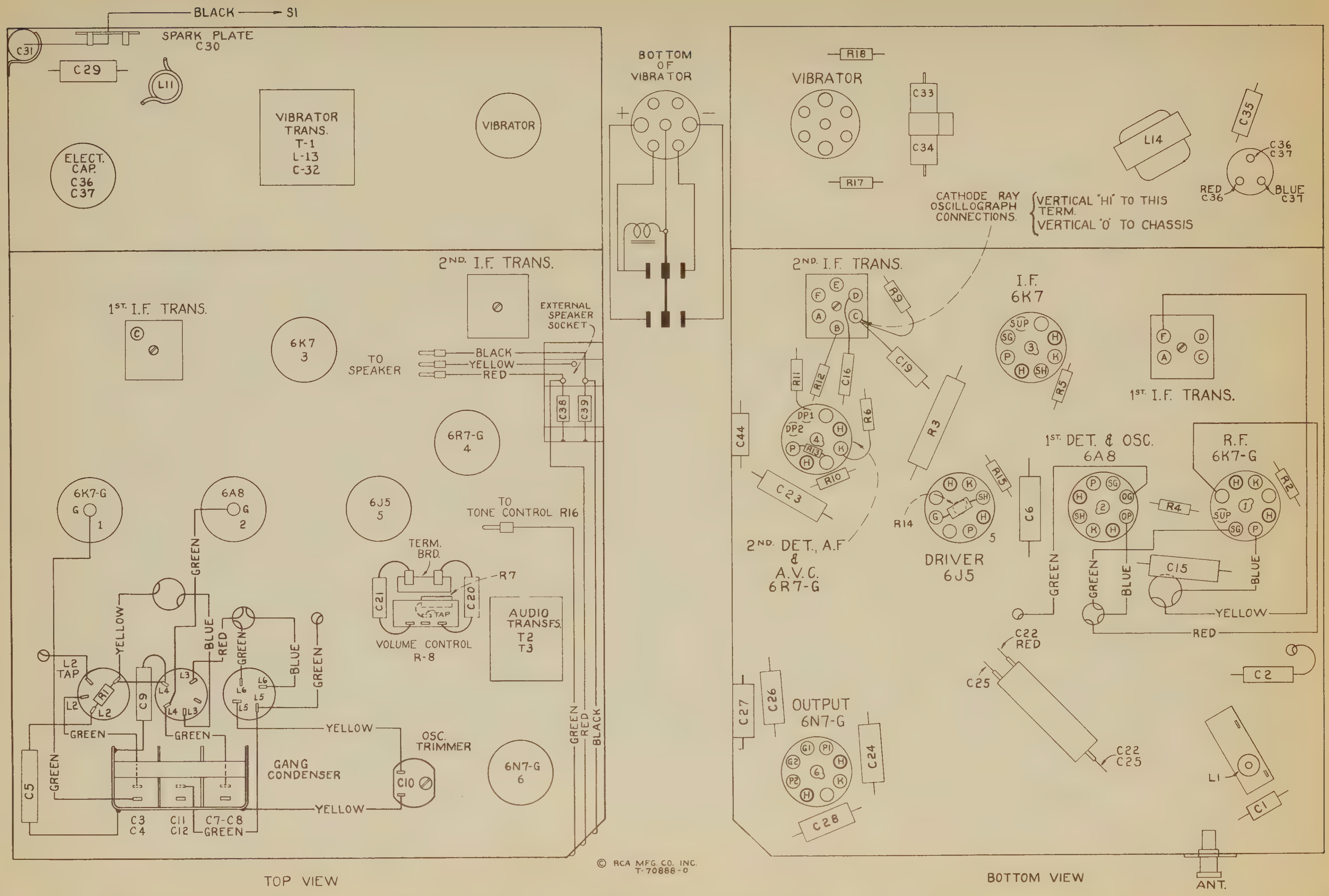


Figure 2—Component Parts Location and R-F Wiring Diagram (Model 8M3)

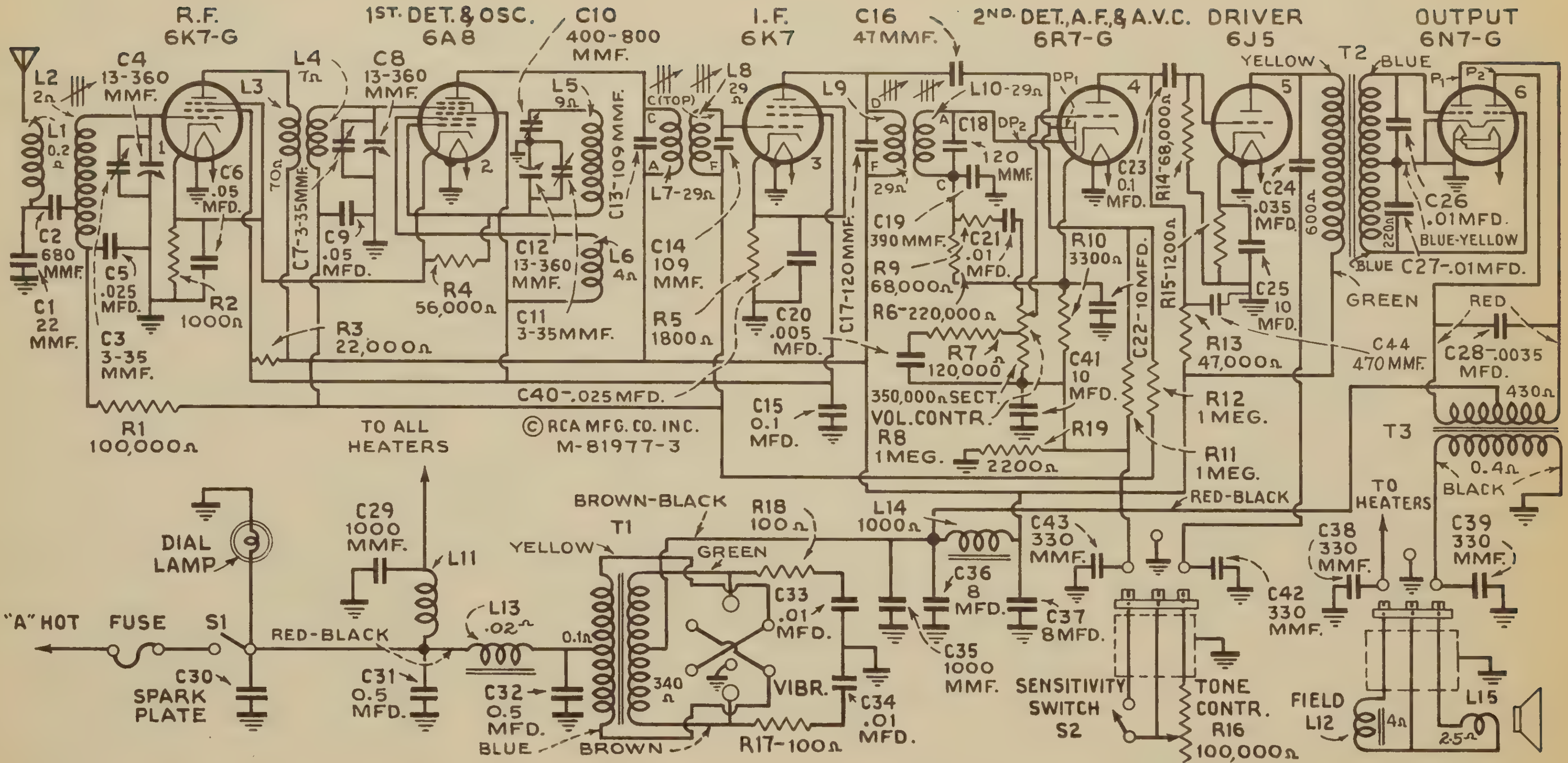


Figure 3—Schematic Circuit Diagram (Model 8M4)

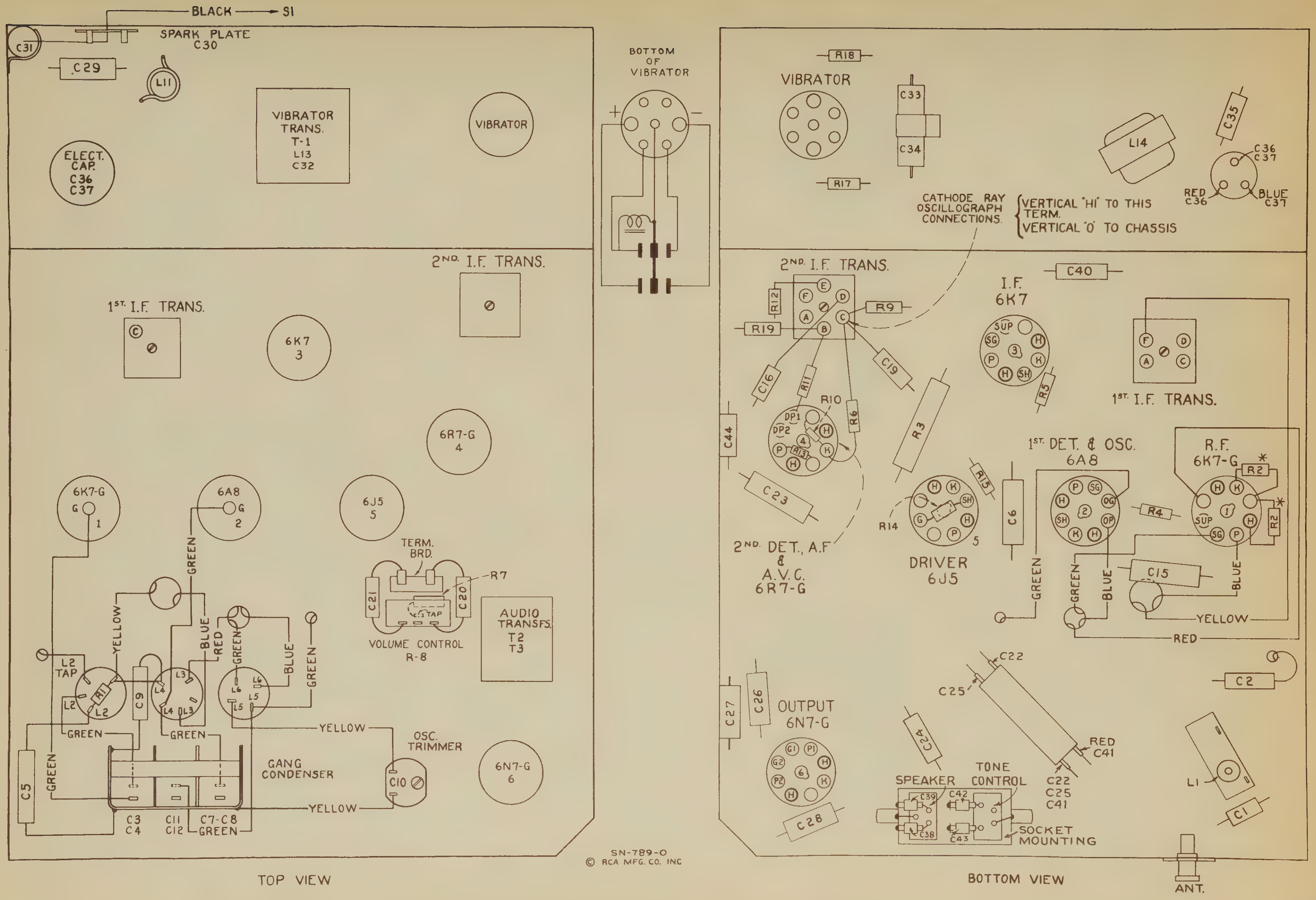


Figure 4—Component Parts Location and R-F Wiring Diagram (Model 8M4)

* R2 may consist of two resistors connected in series having a total value of 1,000 ohms or a single 1,000 ohm resistor. Make replacements with Stock No. 14720.

Service Data

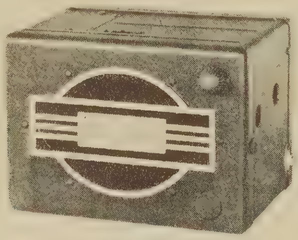
Antenna Compensating Capacitor.—Trimmer C3 is accessible by removing the plug button from the front cover of the receiver case. This trimmer must be adjusted for maximum signal output on a weak station around 1,400 kc after installation and with the antenna properly connected.

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three, narrow, celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. The dust cover should be cemented in place with ambroid upon completion of adjustment.

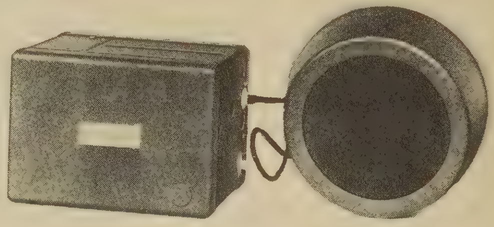
Vibrator.—The mechanical vibrator has a plug-in base for easy removal. Its adjustments have been accurately set during manufacture by means of special equipment. In cases of faulty operation, a replacement unit should be installed. The symmetrical plug-in base provides correct output-voltage polarity on automobiles with either positive or negative "A"-battery ground. When positive (+) side of battery is grounded, insert vibrator so positive (+) symbol is nearest label on vibrator-compartment partition; for negative (–) ground, insert with negative (–) symbol nearest label.

Dial Pointer Adjustment.—With receiver and control unit properly installed in car, rotate "Tuning" knob to its extreme clockwise position and then to its extreme counter-clockwise position, irrespective of location of pointer on dial. Pull out dial-lamp socket from control unit, locate the pointer adjusting screw at bottom of hole and turn with a small screwdriver until the pointer on dial is at the end calibration mark beyond "55" on the dial scale. Final adjustment may be made, if desired, by tuning in a station of known frequency and adjusting dial pointer to the frequency of the station.

Power Switch and Volume Control Adjustment.—Rotate the "Off-On-Volume" control knob to its extreme clockwise position and then back to its extreme counter-clockwise position. This sets the friction-clutch mechanism in proper alignment.



Model 8M3



Model 8M4

Alignment Procedure

Calibrate the tuning-dial pointer to the low-frequency calibration mark as outlined under "Dial Pointer Adjustment."

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 5 and 6.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figures 2 and 4. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

On Model 8M4, the sensitivity control should be placed in its clockwise (maximum sensitivity) position.

Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Ant. Conn." means that the test-oscillator signal should be applied to the receiver at the antenna connector on side of case. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Order of Alignment	Test Oscillator			Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	6K7 I-F Grid Cap	.001 Mfd.	260 kc	No Signal 550-750 kc	2nd I-F Trans.	L9 and L10	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	260 kc	No Signal 550-750 kc	1st I-F Trans.	L7 and L8	Max. (peak)
3	Ant. Conn.	150 Mmfd.	600 kc	600 kc	L-F Osc.	C10	Max. (peak)
4	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	H-F Osc.	C11	Max. (peak)
5	Ant. Conn.	150 Mmfd.	600 kc	Rock Thru 600 kc	L-F Osc.	C10	Max. (peak)
6	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	H-F Osc.	C11	Max. (peak)
7	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	Det.	C7	Max. (peak)
8	Ant. Conn.	150 Mmfd.	1,400 kc	1,400 kc	Ant.	C3*	Max. (peak)

*** Re-adjust C3 after installation as outlined under "Antenna Compensating Capacitor."**

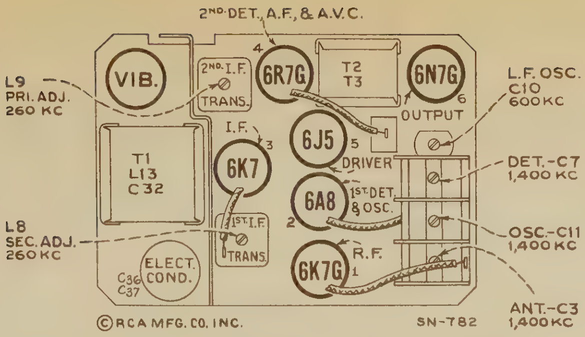


Figure 5—Radiotron and Trimmer Locations (Models 8M3 and 8M4)

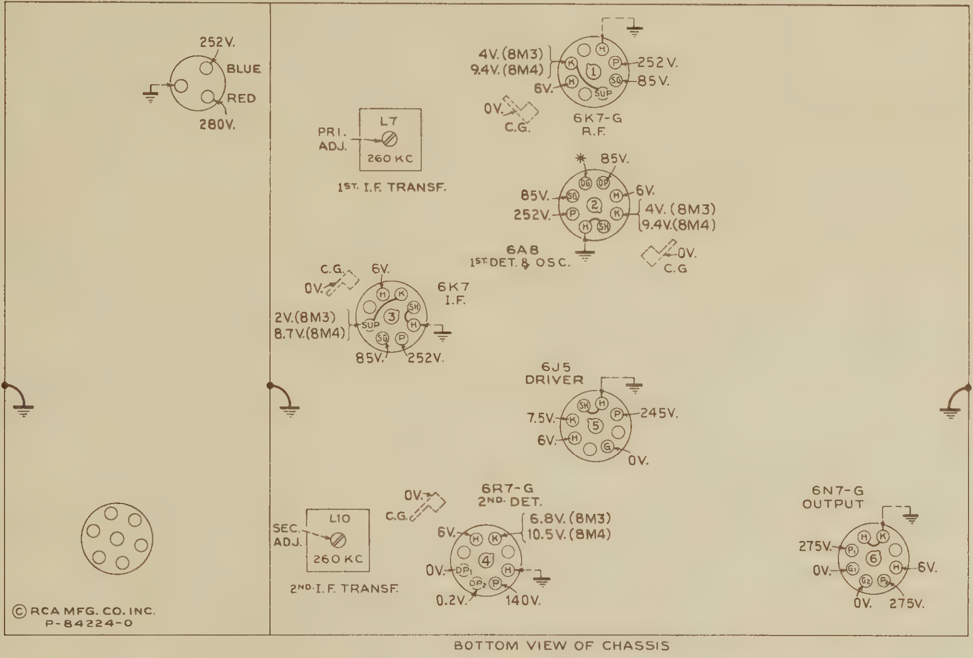


Figure 6—Radiotron Socket Voltages and Trimmer Locations (Models 8M3 and 8M4)

(Measured at 6.3 volts battery supply—Volume control minimum—No signal input—Sensitivity control (Model 8M4) clockwise)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ±20% when the receiver is normally operative at its rated battery voltage.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
13789	Bracket—Chassis mounting bracket and stud assembly—Model 8M4 only..................	
13543	Bracket—Chassis mounting bracket and stud assembly—Model 8M3 only................	
30802	Capacitor—22 Mmfd. (C1)..................	
13141	Capacitor—47 Mmfd. (C16).................	
14262	Capacitor—109 Mmfd. (C13, C14)..........	
12404	Capacitor—120 Mmfd. (C17, C18)..........	
30832	Capacitor—330 Mmfd. (C38, C39, C42, C43)—(C42, C43 in Model 8M4 only).........	
13894	Capacitor—390 Mmfd. (C19)...............	
11978	Capacitor—Adjustable—400-800 Mmfd. (C10)..	
30433	Capacitor—470 Mmfd. (C44)...............	
14498	Capacitor—680 Mmfd. (C2)................	
30800	Capacitor—1,000 Mmfd. (C29, C35).........	
30303	Capacitor—.0035 Mfd. (C28)...............	
4838	Capacitor—.005 Mfd. (C20)...............	
4858	Capacitor—.01 Mfd. (C21, C26, C27)........	
13695	Capacitor—Two sections each .01 Mfd. (C33, C34)	
4870	Capacitor—.025 Mfd. (C5, C40)—(C40 in Model 8M4 only)........................	
5196	Capacitor—.035 Mfd. (C24)..........	
4886	Capacitor—.05 Mfd. (C6, C9)...............	
4839	Capacitor—0.1 Mfd. (C15, C23)............	
30828	Capacitor—Two sections each 8 Mfd. (C36, C37)	
14902	Capacitor—Comprising two sections, each 10 Mfd. (C22, C25) Model 8M3 only.........	
30829	Capacitor—Comprising three sections, each 10 Mfd. (C22, C25, C41) Model 8M4 only....	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
30793	Coil—Antenna coil and shield (L2)	
30792	Coil—Oscillator coil—less shield (L5, L6)	
30794	Coil—R.F. coil—less shield (L3, L4)	
30823	Condenser—3-gang variable tuning condenser (C3, C4, C7, C8, C11, C12)	
12882	Core—Adjustable core and stud for antenna coil	
12006	Core—Adjustable core and stud for I.F. transformer	
13996	Coupling—Insulated coupling for tuning condenser shaft	
13691	Filter—Antenna filter (L1)	
30824	Gear—Large gear for condenser rotor shaft	
30825	Gear—Small worm gear for condenser	
13694	Guide—Volume control shaft guide	
13111	Reactor—Filter reactor (L14)	
30540	Resistor—100 ohms, insulated, ½ watt (R17, R18)	
12261	Resistor—390 ohms, insulated, ¼ watt (R2, R5)—Model 8M3 only	
14720	Resistor—1,000 ohms, insulated, ¼ watt (R2)—Model 8M4 only	
12267	Resistor—1,200 ohms, insulated, ¼ watt (R15)	
12194	Resistor—1,800 ohms, insulated, ¼ watt (R5)—Model 8M4 only	
13716	Resistor—2,200 ohms, insulated, ¼ watt (R19)—Model 8M4 only	
12312	Resistor—3,300 ohms, insulated, ¼ watt (R10)	
13669	Resistor—22,000 ohms, carbon type, 2 watt (R3)	
11646	Resistor—47,000 ohms, insulated, ¼ watt (R13)	
12286	Resistor—56,000 ohms, insulated, ¼ watt (R4)	
13715	Resistor—68,000 ohms, insulated, ¼ watt (R9, R14)	
11281	Resistor—100,000 ohms, carbon type, 1/10 watt (R1)	
13734	Resistor—120,000 ohms, insulated, ¼ watt (R7)—Model 8M4 only	
13698	Resistor—180,000 ohms, insulated, ¼ watt (R7)—Model 8M3 only	
12264	Resistor—220,000 ohms, insulated, ¼ watt (R6)	
13730	Resistor—1 meg., insulated, ¼ watt (R11, R12)	
3584	Ring—Retaining ring for R.F. coil shield	
13472	Ring—Retaining ring for oscillator coil shield	
13471	Ring—Retaining ring for antenna coil shield	
5129	Ring—Tube-shield ring	
3623	Shield—R.F. or oscillator coil shield	
14491	Shield—Antenna coil shield	
12008	Shield—I.F. transformer shield can	
12218	Shield—Tube shield and ring	
11196	Socket—Radiotron socket	
12241	Socket—Vibrator socket	
12007	Spring—Retaining spring for core, Stock Nos. 12882 and 12006	
30796	Transformer—First I.F. transformer (L7, L8, C13, C14)	
30483	Transformer—Second I.F. transformer (L9, L10, C17, C18)	
12230	Transformer—Audio transformer (T2, T3)	
30827	Transformer—Vibrator power transformer (T1, L13, C32)	
12236	Vibrator	
13711	Volume Control (R8)	
	REPRODUCER ASSEMBLIES (72684-1) Model 8M3	
12482	Board—Reproducer terminal board	
12450	Coil—Field coil (L12)	
12451	Cone—Reproducer cone complete (L15)	
9687	Reproducer—Complete	
	REPRODUCER ASSEMBLIES Model 8M4	
13794	Cable—3-conductor shielded reproducer cable, approx. 18-in. long, complete with 3-contact male connector	
13795	Coil—Reproducer field coil (L12) for speaker marked 72947-1	
13796	Cone—Reproducer cone and dust cap (L15) for speaker marked 72947-1	
30834	Cone—Reproducer cone and dust cap for speaker marked 72947-22 (L15)	
11984	Connector—3-contact male connector for reproducer cable	

STOCK No.	DESCRIPTION	
30833	Housing—Reproducer housing complete — less speaker unit and cable	
9774	Reproducer—Speaker unit only—less case, cable, and mounting parts	
13797	Screw—Reproducer housing screw	
	CONTROL BOX ASSEMBLIES Model 8M3	
30817	Cord—Dial drive cord—25 ft. length only	
30820	Cover—Cover shell and spring used on control shafts, beneath knobs	
30818	Dial—Round etched glass dial	
30813	Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel, and cord assembled—less dial lamp and dial lamp socket	
30819	Indicator—Indicator pointer disc	
11765	Lamp—Dial lamp	
30816	Socket—Dial lamp socket and lead	
30814	Tuning Unit—Comprising knob shaft, bearing, and gear case—less knob	
30815	Volume Unit—Comprising knob shaft, bearing, and on-off switch—less knob	
	CONTROL BOX ASSEMBLIES Model 8M4	
13792	Cable—3-conductor shielded tone and sensitivity cable complete with 4-prong plug	
30817	Cord—Dial drive cord—25 ft. length only	
30818	Dial—Round etched glass dial	
30813	Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel and cord assembled—less dial lamp and dial lamp socket	
30819	Indicator—Indicator pointer disc	
30837	Knob—Wing knob	
11765	Lamp—Dial lamp	
30816	Socket—Dial lamp socket and lead	
30835	Tuning Unit—Comprising knob shafts, bearing, gear case and sensitivity switch—less knobs	
30836	Volume Unit—Comprising knob shafts, bearing, tone control and on-off switch—less knobs	
	MISCELLANEOUS ASSEMBLIES	
30839	Case—Receiver case complete—less speaker grille—Model 8M3 only	
30840	Case—Receiver case complete—Model 8M4 only	
13109	Capacitor—0.5 Mfd. (C31)	
4293	Capacitor—Ammeter capacitor	
5025	Capacitor—Generator capacitor	
5023	Fuse—15 ampere	
30838	Grille—Speaker grille and cloth—Model 8M3 only	
4290	Insulator—Fuse holder insulator	
30642	Knob—Tone control knob—Model 8M3 only	
7766	Lead—"A" lead (ammeter end) complete with clip	
12445	Lead—"A" lead (set end) complete with male section of connector	
13806	Ring—Soft rubber ring for speaker mounting—Model 8M4 only	
30811	Shaft—Tuning control flexible shaft — approx. 25⅛-in. long	
13926	Shaft—Volume control flexible shaft — approx. 25⅝-in. long	
12248	Socket—Bracket and socket for speaker cable—Model 8M3 only	
12502	Socket—Bracket and socket for tone control lead—Model 8M3 only	
13804	Socket—Bracket and socket for speaker and control box cables—Model 8M4 only	
12254	Stud—Speaker mounting stud, spacer, and washer assembly—Model 8M4 only	
12448	Stud—Receiver mounting stud, washer, and nut assembly	
5024	Suppressor—Distributor suppressor	
12249	Tone Control—(R16)—Model 8M3 only	

RCA Victor

MODEL 9M1

Five-Tube, Push-Button, Superheterodyne Automobile Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 32—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

TUBES AND FUNCTIONS

6A8	First Detector—Oscillator
6K7	I-F Amplifier
6Q7	Second Det., A-F Amp. and A.V.C.
6F6	Output
6X5	Rectifier
Dial Lamp	7.5 volts, 0.2 ampere

FREQUENCY RANGE	550-1,550 kc

POWER OUTPUT

Type	Pentode
Undistorted	2.1 watts
Maximum	4.1 watts

POWER SUPPLY

"A"	6.3 volt Auto Storage Battery
"B"	Non-Synchronous Vibrator
Current Drain	6.75 amps.

CHASSIS FEATURES

No. I-F Stages	One

Completely Shielded Ant. Filter
Magnetite-core Adjusted Antenna and I-F Transformers
Ignition-Noise-Suppression Filters
Antenna Compensator Trimmer
Illuminated Dial

ALIGNMENT FREQUENCIES

I-F	455 kc
Ant.	600 and 1,400 kc
Oscl.	No Adjustment

LOUDSPEAKER

Type	Electrodynamic
Size	5 inches
V.C. Impedance	3.2 ohms at 400 cycles
Field Coil Resistance	5 ohms
App. Field Coil Voltage Drop	6 volts

OPERATING FEATURES

Mechanical Push Button Tuning
Independent Manual Tuning Control
Automatic Volume Control

Mechanical Specifications

OPERATING CONTROLS

1. Left Knob	On-Off Switch and Volume
2. Push Buttons	Station Tuning
3. Right Knob	Manual Tuning, Ratio 2½—1

Net Weight	8½ pounds
Shipping Weight	14 pounds

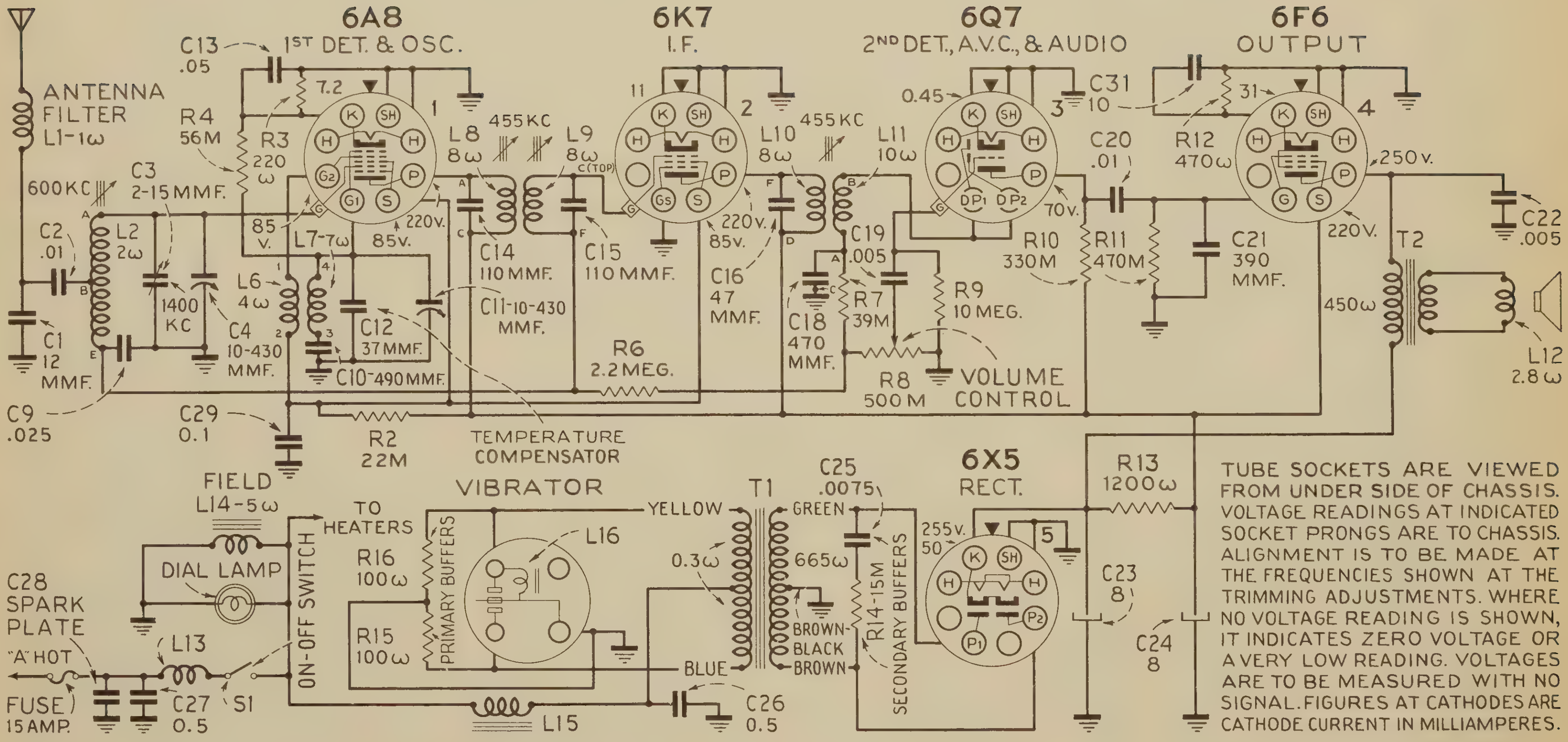
CONTROL OPERATION

Turn Right	Power On; Volume Increase
Push Button	Signal Tuned Automatically
Rotate	Signal Tuned Manually

General Description

Model 9M1 is a five-tube superheterodyne receiver with loudspeaker and radio chassis in the same case. It is equipped with five push buttons, for tuning your five favorite broadcast stations, as well as the standard method of dial tuning. Adjustments for push button tuning are explained on page 3 under the heading "Push Button Tuning Mechanism." The receiver is designed to be mounted under the dash panel. The operating controls are integral with the radio and speaker case.

Loudspeaker.—The loudspeaker voice coil should be centered in the usual manner with three narrow paper feelers, after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, taking care not to allow the acetone to flow into the air gap. The dust cover should be cemented back in place with ambroid cement after adjustment has been completed.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

Schematic Circuit Diagram

Antenna Circuit.—The antenna circuit is designed to work with a low capacity antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If larger antennas, such as screened top or a double under the running-board having a total capacity of 200 to 550 mmf. is to be used, it will be necessary to reduce the value of the antenna coupling capacitor C-2 from .01 to approximately 200 mmf. (.0002). For even larger antennas such as insulated steel tops, a correspondingly smaller value of C-2 (approximately 125 to 150 mmf.) should be used keeping in mind to use the largest value possible with which the antenna circuit can be aligned.

After installation, and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer (C-3) for maximum signal output. This trimmer is accessible by prying off the nameplate between the control knobs.

Antenna Filter.—A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. As shown in Figure 5, the filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.

Push Button Tuning Mechanism.—The push button tuning mechanism used in this receiver is of the mechanical type, wherein the movement of the button actually turns the tuning condenser to any pre-determined setting. The movement is actuated thru a Push-Arm, Cam, Rocker Plate and Sector Gear, which meshes with a Scissors Gear directly fastened to the tuning condenser shaft—(See Figures 1 and 2.) The scissors gear prevents backlash between the sector gear and the tuning condenser. Since the sector gear is mounted directly on the rocker plate shaft, the position of the rocker plate will accurately determine the position of the tuning condenser.

The cams (Figure 2) which determine the stop points for each button are mounted on the push arms and are locked in place by the locking screws and lock-shoes, which press firmly against the cams when the locking screws are tightened. **Care should be used when locking screws are tightened not to use excessive force as the threads may become damaged or stripped.**

Adjustments for Push Button Tuning are very easily made. To adjust a push button for any station proceed as follows:

(1) Pull the push button off the push arm.
(2) Loosen the cam locking screw one-half turn.
(3) Using the Dial Tuning Control tune in the station.
(4) Press the push arm in as far as it will go and accurately retune station.
(5) With the push button still held down, tighten cam locking screw.
(6) Replace the push button.

With the locking screw tight, the cam is locked in position and when the button is pushed in, the cam pressure causes the rocker plate to assume the position that tunes in the desired station. (See Figure 2.)

Manual Tuning Dial.—A manual tuning knob is provided so that additional stations may be tuned in as desired. The manual tuning shaft is connected thru a cord drive to a drum on the rocker plate shaft. This same cord drives the dial drum by passing over a pulley on the drum shaft. Figure 6 shows the complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and dial drum pulley. Stops are provided on the dial drum so that dial scale adjustment is made by tuning the set to the extreme ends of the band.

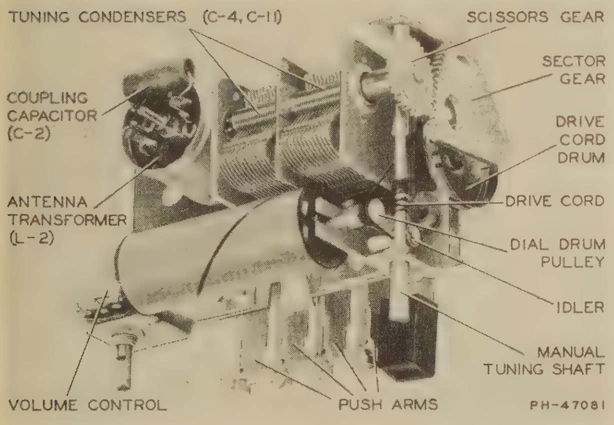


Figure 1—Push Button and Manual Tuning Assembly

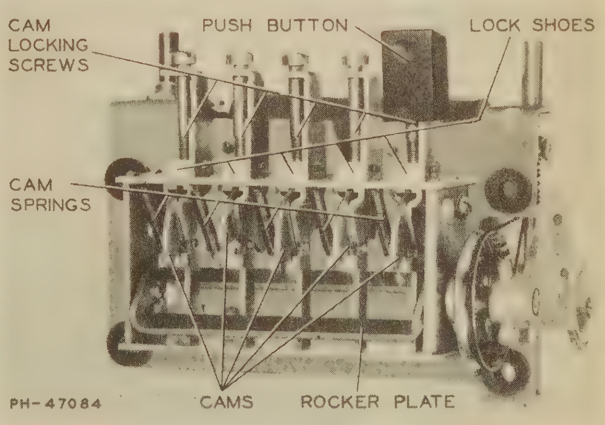


Figure 2—Bottom View of Push Button Mechanism

Alignment Procedure

PRELIMINARY:

Output meter connections.......... Across speaker voice coil
Output meter readings to indicate 1 watt.......... 1.8 volts
Generator ground lead connections.......... To chassis
Dummy antenna value to be in series with generator output.......... See Chart Below
Connection of generator output lead.......... See Chart Below
Generator modulation.......... 30%, 400 cycles
Position of Volume Control.......... Fully clockwise
Chassis must be in its case with front end removed, when aligning R-F circuit.

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Adjustment Symbol	Circuit Adjusted
No Signal 550-750 kc	455 kc	.001 mfd.	6K7 Grid	L-10	2nd I.F. Trans.
No Signal 550-750 kc	455 kc	.001 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3	Ant.
600 kc	600 kc	.0001 mfd. †	Ant. Lead	L-2	Ant.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3 *	Ant.

NOTE: No oscillator alignment adjustments are required in this receiver.

IMPORTANT ALIGNMENT NOTES.

† Make the generator connection to the receiver thru a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If C-2 has been changed, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit" in "Service Hints."

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

Oscillator circuit alignment is not required in this receiver at either end of the band; the oscillator coil is pre-adjusted for inductance in the factory.

Since the oscillator coil is unshielded, the case has some effect on its inductance. Therefore alignment must be done either with the chassis in the case or with a steel plate (covering the bottom of chassis), substituting for the case.

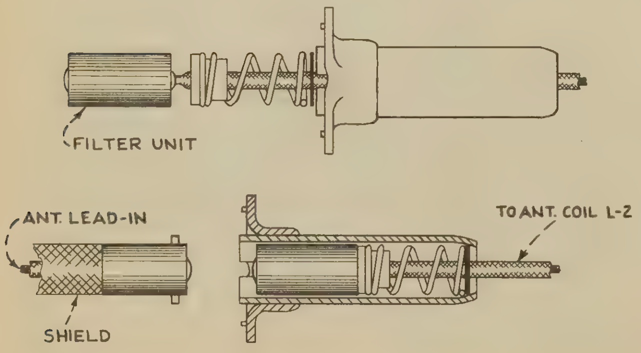


Figure 5—Antenna Filter

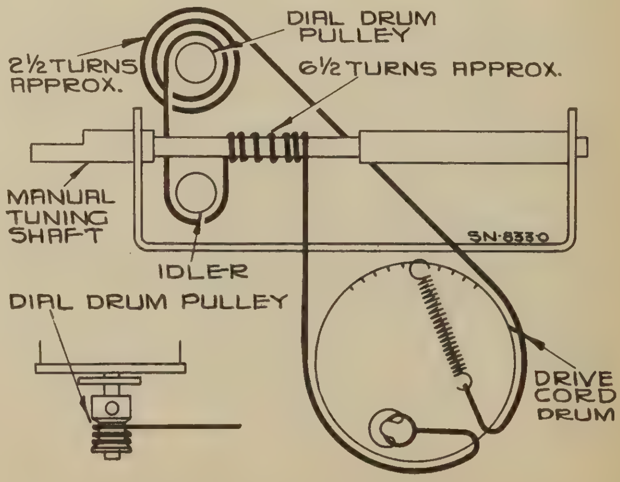


Figure 6—Drive Cord Hookup

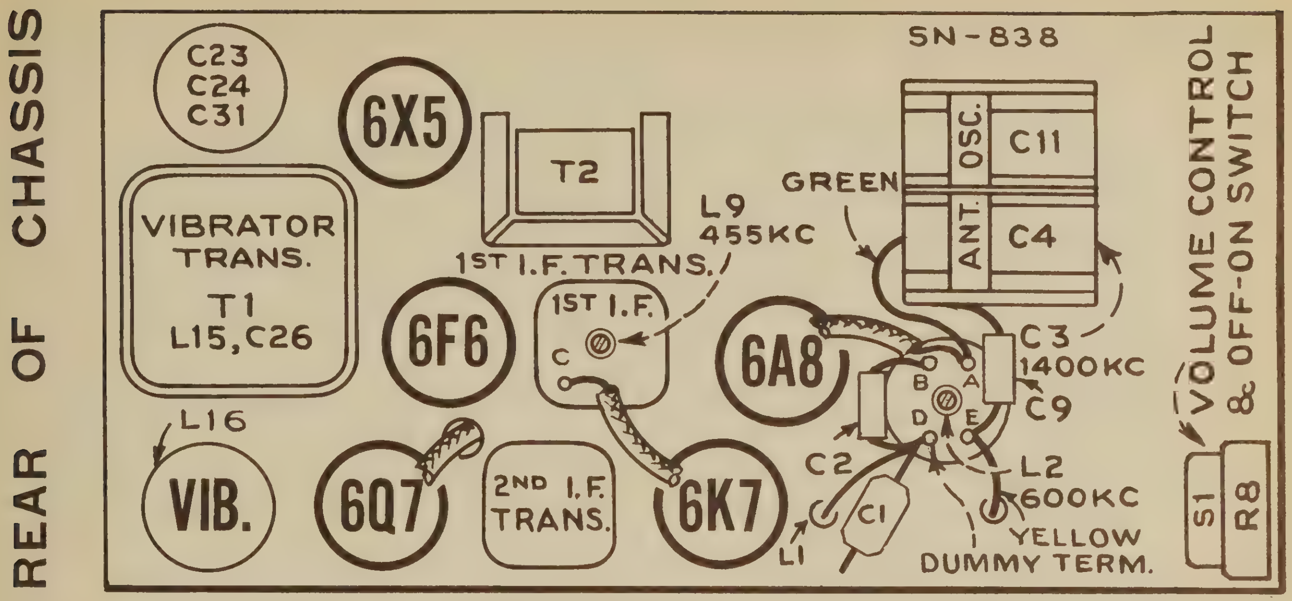


Figure 3—Location of Parts and Alignment Adjustments on Top of Chassis

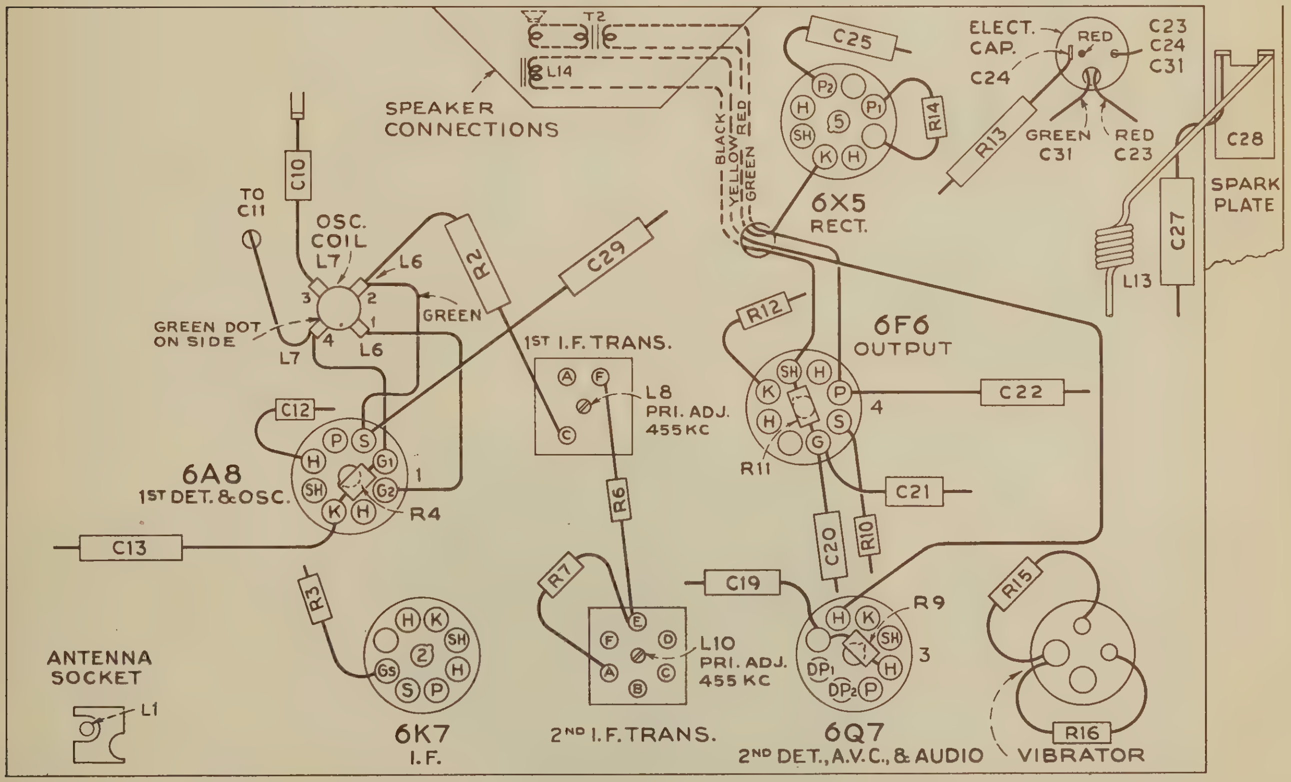
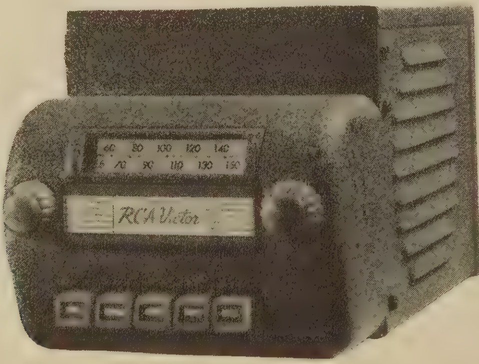


Figure 4—Location of Parts and Alignment Adjustments on Bottom of Chassis

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
13002	Capacitor—12 mmfd. (C1)	
31728	Capacitor—37 mmfd. (C12)	
12405	Capacitor—47 mmfd. (C16)	
14262	Capacitor—110 mmfd. (C14, C15)	
13894	Capacitor—390 mmfd. (C21)	
30673	Capacitor—470 mmfd. (C18)	
31726	Capacitor—490 mmfd., temp. coeff. (C10)	
4838	Capacitor—.005 mfd. (C19, C22)	
30626	Capacitor—.0075 mfd. (C25)	
14393	Capacitor—.01 mfd. (C2, C20)	
4870	Capacitor—.025 mfd. (C9)	
30882	Capacitor—.05 mfd. (C13)	
4839	Capacitor—0.1 mfd. (C29)	
12741	Capacitor—0.5 mfd. (C27)	
31598	Capacitor—Comprising two 8 mfd., and one 10 mfd. sections (C23, C24, C31)	
31596	Clip—Spring clip to hold oscillator coil	
31766	Coil—Antenna coil less shield (L2)	
31977	Coil—Antenna filter (L1)	
31594	Coil—Oscillator coil (L6, L7)	
11765	Lamp—Dial lamp	
30641	Lead—Ammeter lead (chassis end), complete with male section of fuse holder	
30540	Resistor—100 ohms, ½ watt (R15, R16)	
14561	Resistor—220 ohms, ¼ watt (R3)	
30499	Resistor—470 ohms, ½ watt (R12)	
6134	Resistor—1,200 ohms, 1 watt (R13)	
12695	Resistor—15,000 ohms, ¼ watt (R14)	
13669	Resistor—22,000 ohms, 2 watt (R2)	
12266	Resistor—39,000 ohms, ¼ watt (R7)	
12286	Resistor—56,000 ohms, ¼ watt (R4)	
14983	Resistor—330,000 ohms, ¼ watt (R10)	
12285	Resistor—470,000 ohms, ¼ watt (R11)	
12679	Resistor—2.2 meg., ¼ watt (R6)	
13601	Resistor—10 meg., ¼ watt (R9)	
13471	Ring—Retaining ring for coil, Stock No. 31766	
31639	Socket—Dial lamp socket	
31319	Socket—Tube socket	
13686	Socket—Vibrator socket	
14376	Transformer—First i-f transformer (L8, L9, C14, C15)	
30672	Transformer—Second i-f transformer (L10, L11, C16, C18)	
31597	Transformer—Vibrator power transformer (T1, L15, C26)	
13688	Vibrator—Plug-in vibrator complete (L16)	
31637	Volume control and power switch (R8, S1)	
	TUNING UNIT ASSEMBLIES	
31604	Condenser—2-gang variable condenser (C3, C4, C11)	
31614	Cord—Variable condenser drive cord	
31725	Drum—Indicator drum assembly	
31610	Drum—Variable condenser drive cord drum	
31612	Gear—Variable condenser drive gear sector—fastens on cam shaft	
31645	Mechanism—Comprising 5-push button levers and cams, cam plate, and variable condenser mounting bracket, assembled	
31606	Pulley—Indicator drum pulley	
31607	Pulley—Pulley for indicator drum bracket	
4389	Screw—No. 6-32 x 3/16-in. set screw for pulley, Stock No. 31606	
31613	Screw—No. 8-32 x ⅜-in. set screw for gear, Stock No. 31612	
31611	Screw—No. 8-32 x ¼-in. set screw for drum, Stock No. 31610	
31609	Shaft—Station selector knob shaft	
31615	Spring—Variable condenser drive cord tension spring	
30585	Spring—Push button arm tension spring	
2917	Washer—"C" washer to hold knob shaft	
31608	Washer—"C" washer to hold pulley, Stock No. 31607	
	SPEAKER ASSEMBLIES (Speaker 84391-1)	
30782	Cone—Speaker cone and voice coil (L12)	
30781	Speaker—Complete	
30783	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES (Speaker 84391-3)	
31771	Cone—Speaker cone and voice coil (L12)	
31770	Speaker—Complete	
31772	Transformer—Output transformer (T2)	
	MISCELLANEOUS ASSEMBLIES	
4289	Body—Fuse holder body for ammeter lead	
31656	Button—Push button	
5025	Capacitor—Generator capacitor	
31653	Case—Complete receiver case only—less name plate, and dial scale	
4291	Clip—Spring clip for ammeter lead	
31456	Covers—8-protective celluloid covers for call letter markers	
31654	Dial—Dial scale and holder	
4286	Ferrule—Bushing and ferrule for fuse holder	
5023	Fuse—15 amp	
4290	Insulator—Insulating sleeve for fuse holder	
31658	Knob—Station selector or volume control knob	
7766	Lead—Ammeter lead complete with clip and fuse holder	
31589	Markers—One set call letter markers for push buttons	
31662	Mounting—Complete set of mounting brackets, strap, washers, screws, bolts, and nuts	
31660	Plate—Name plate	
31646	Spring—Retaining spring for knobs	
4284	Spring—Spring for fuse holder	
5024	Suppressor—Distributor suppressor	
4285	Washer—Insulating washer for fuse holder	



First Edition

Printed in U. S. A.

RCA Victor

MODEL 9M2

Chassis No. RC 357A

Six-Tube, Push-Button, Superheterodyne Automobile Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 33—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

TUBES AND FUNCTIONS

6K7	R-F Amplifier
6A8	First Detector—Oscillator
6K7	I-F Amplifier
6Q7	Second Detector, A-F Amplifier and A.V.C.
6F6	Output
6X5	Rectifier
Dial Lamp	7.5 volts, 0.2 ampere

FREQUENCY RANGE .... 550-1,550 kc

POWER OUTPUT

Type	Pentode
Undistorted	2.0 watts
Maximum	3.5 watts

CHASSIS FEATURES

No. R-F Stages	One
No. I-F Stages	One

Completely Shielded Antenna Filter
Magnetite-core Adjusted Antenna, Oscillator and I-F Transformers
Ignition-Noise-Suppression Filters
Antenna Compensator Trimmer
Illuminated Dial

ALIGNMENT FREQUENCIES

I-F	455 kc
Antenna	1,400 kc
R-F	1,400 kc
Oscillator	600 kc

LOUDSPEAKER

Type	Electrodynamic
Size	5 inches
Voice-Coil Impedance	3.2 ohms at 400 cycles
Field Coil Resistance	5 ohms
App. Field Coil Voltage Drop	6 volts

OPERATING FEATURES

Mechanical Push Button Tuning
Independent Manual Tuning Control
Automatic Volume Control

Mechanical Specifications

OPERATING CONTROLS

1. Left Knob	On-Off Switch and Volume
2. Push Buttons	Station Tuning
3. Right Knob	Manual Tuning, Ratio 2½-1

CONTROL OPERATION

Turn Right	Power On; Volume Increase
Push Button	Signal Tuned Automatically
Rotate	Signal Tuned Manually

General Description

Model 9M2 is a six-tube superheterodyne receiver with loudspeaker and radio chassis in the same case. It is equipped with five push buttons, for tuning your five favorite broadcast stations, as well as the standard method of dial tuning. Adjustments for push button tuning are explained under the heading "Push Button Tuning Mechanism." The receiver is designed to be mounted under the dash panel. The operating controls are integral with the radio and speaker case.

Loudspeaker.—The loudspeaker voice coil should be centered in the usual manner with three narrow paper feelers, after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, taking care not to allow the acetone to flow into the air gap. The dust cover should be cemented back in place with ambroid cement after adjustment has been completed.

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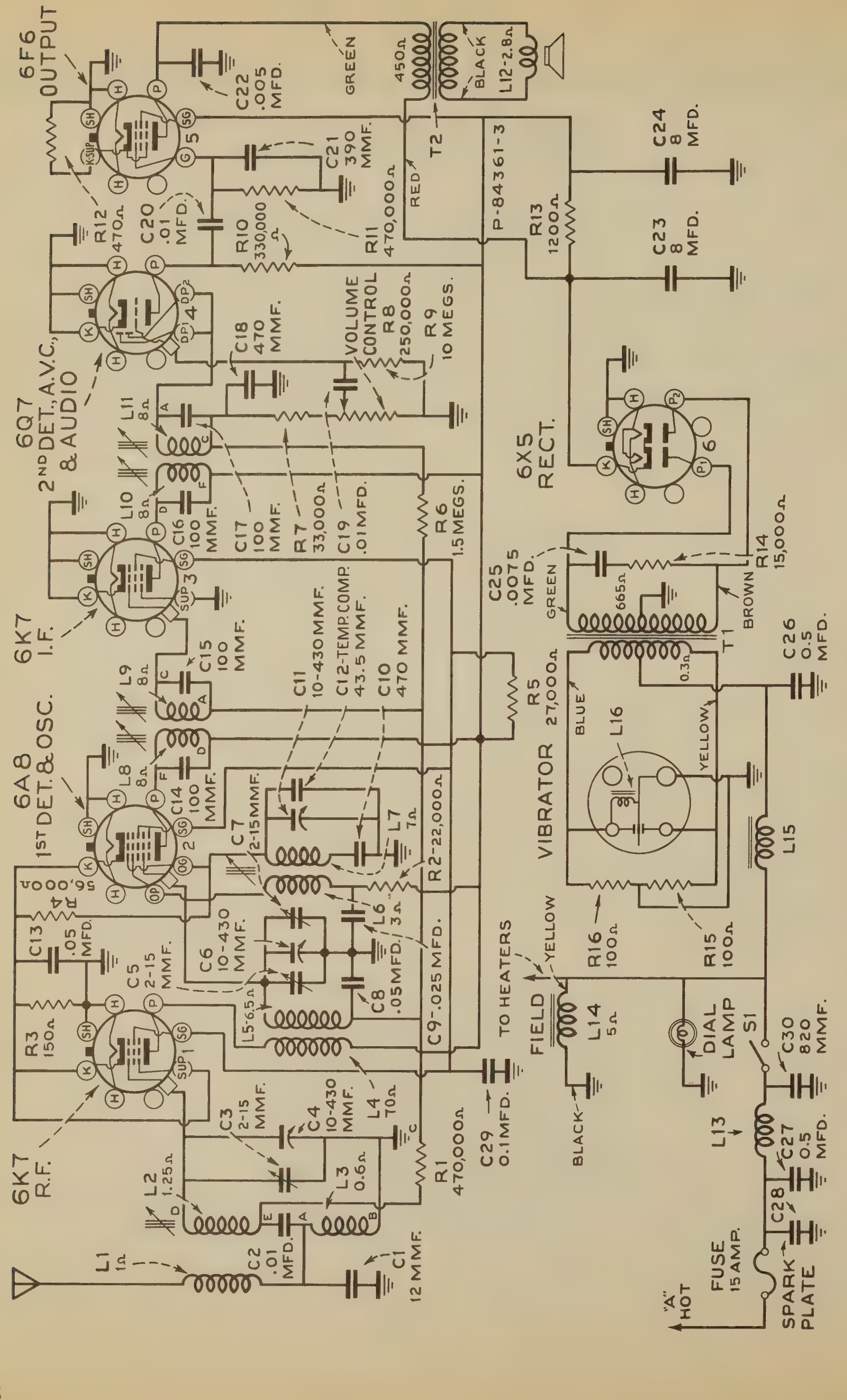


Schematic Circuit Diagram

Antenna Circuit.—The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf. the capacitor added should be approximately 300 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 200 mmf. Cars using an insulated steel top of approximately 3,500 mmf. will require a series capacitor of 150 mmf.

After installation, and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer (C-3) for maximum signal output. This trimmer is accessible by prying off the nameplate between the control knobs.

Antenna Filter.—A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. As shown, the filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.

Manual Tuning Dial.—A manual tuning knob is provided so that additional stations may be tuned in as desired. The manual tuning shaft is connected through a cord drive to a drum on the rocker plate shaft. This same cord drives the dial drum by passing over a pulley on the drum shaft. The complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and dial drum pulley are shown. Stops are provided on the dial drum so that dial scale adjustment is made by tuning the set to the extreme ends of the band.

Push Button Tuning Mechanism.—The push button tuning mechanism used in this receiver is of the mechanical type, wherein the movement of the button actually turns the tuning condenser to any pre-determined setting. The movement is actuated through a Push-Arm, Cam, Rocker Plate and Sector Gear, which meshes with a Scissors Gear directly fastened to the tuning condenser shaft. The scissors gear prevents backlash between the sector gear and the tuning condenser. Since the sector gear is mounted directly on the rocker plate shaft, the position of the rocker plate will accurately determine the position of the tuning condenser.

The cams which determine the stop points for each button are mounted on the push arms and are locked in place by the locking screws and lock-shoes, which press firmly against the cams when the locking screws are tightened. **Care should be used when locking screws are tightened not to use excessive force as the threads may become damaged or stripped.**

Adjustments for Push Button Tuning are very easily made. To adjust a push button for any station proceed as follows:

(1) Pull the push button off the push arm.

(2) Loosen the cam locking screw one-half turn.

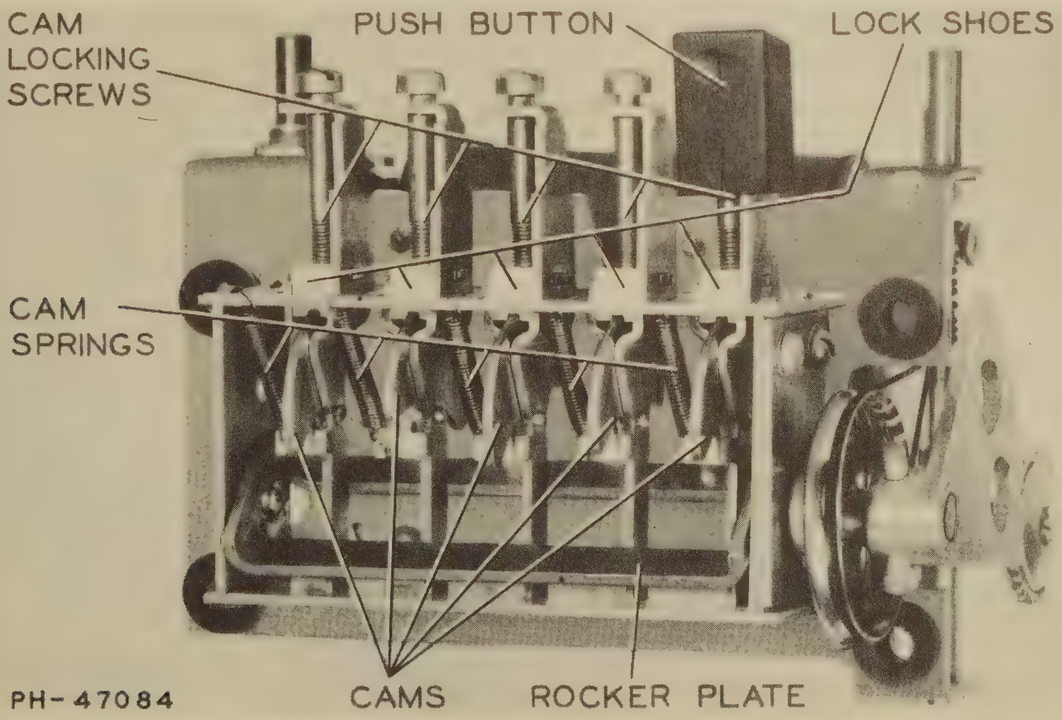
(3) Using the Dial Tuning Control tune in the station.

(4) Press the push arm in as far as it will go and accurately retune station.

(5) With the push button still held down, tighten cam locking screw.

(6) Replace the push button.

With the locking screw tight, the cam is locked in position and when the button is pushed in, the cam pressure causes the rocker plate to assume the position that tunes in the desired station.



Bottom View of Push Button Mechanism

Alignment Procedure

PRELIMINARY:

Output meter connections	Across speaker voice coil
Output meter readings to indicate 1 watt	1.8 volts
Generator ground lead connections	To chassis
Dummy antenna value to be in series with generator output	See Chart Below
Connection of generator output lead	See Chart Below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Adjustment Symbol	Circuit Adjusted
No Signal 550-750 kc	455 kc	.001 mfd.	6K7 I.F. Grid	L-10, L-11	2nd I.F. Trans.
No Signal 550-750 kc	455 kc	.001 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.
Rock Through 600 kc	600 kc	.0001 mfd.†	Ant. Lead	L-7	Osc.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-5	Det.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-3	Ant.
Rock Through 600 kc	600 kc	.0001 mfd.†	Ant. Lead	L-7	Osc.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-5	Det.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-3*	Ant.

IMPORTANT ALIGNMENT NOTES

† Make the generator connection to the receiver through a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If a capacitor has been added in series with the lead from antenna filter L-1 to the antenna coil, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit" in "Service Hints."

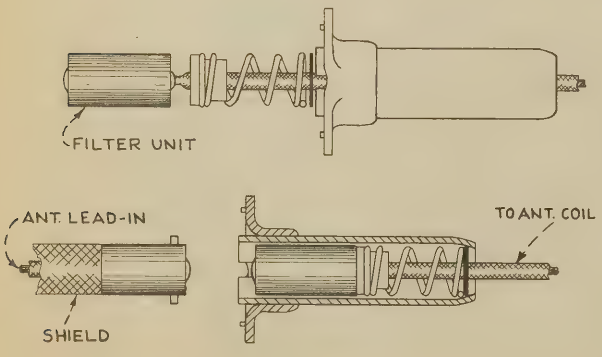
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

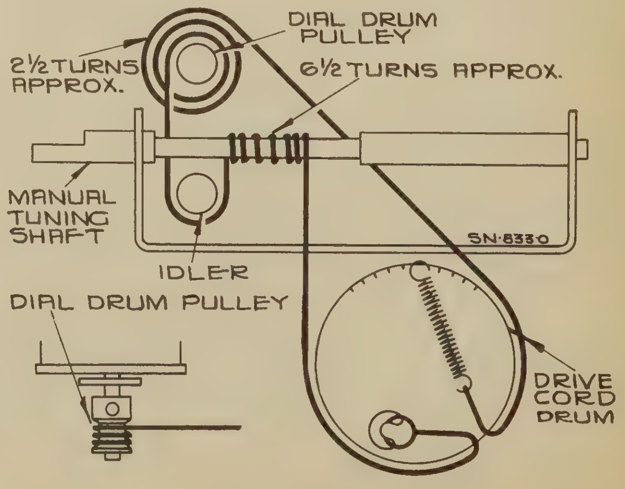
Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

** OSCILLATOR CIRCUIT

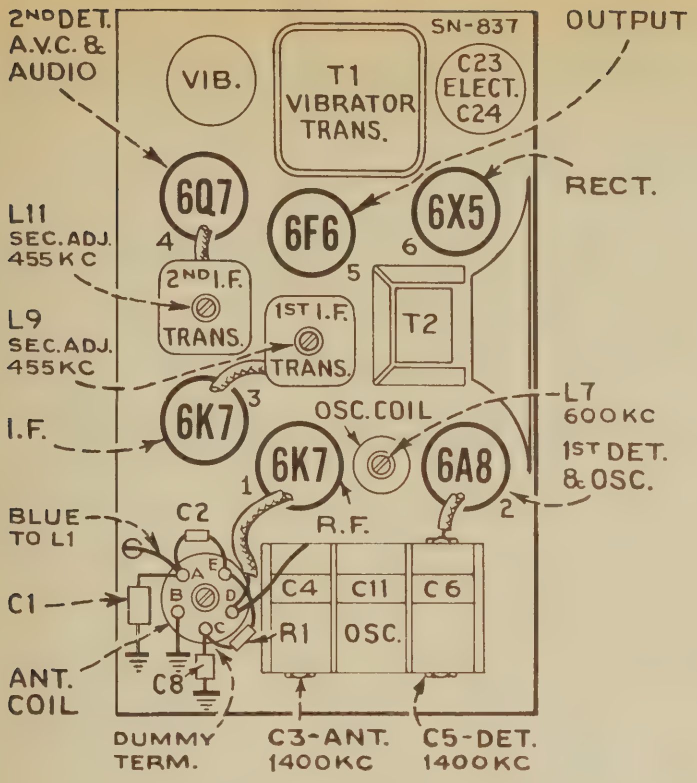
A magnetite core is used to provide temperature stability. The conventional high frequency trimmer has been replaced with a fixed temperature-compensating capacitor (C-12) which determines the high frequency range. Since the inductance of L-7 is adjustable, the conventional series trimmer has been replaced with a fixed capacitor (C-10). C-10 is a special capacitor having zero temperature coefficient to provide for oscillator stability in the low frequency range. Aligning the receiver for 600 kc is accomplished by adjusting L-7 to the antenna and det. circuits (gang condenser must be rocked while making this adjustment). The 1,400 kc alignment is accomplished by adjusting the antenna and the det. trimmers (C-3 and C-5) to the oscillator.



Antenna Filter

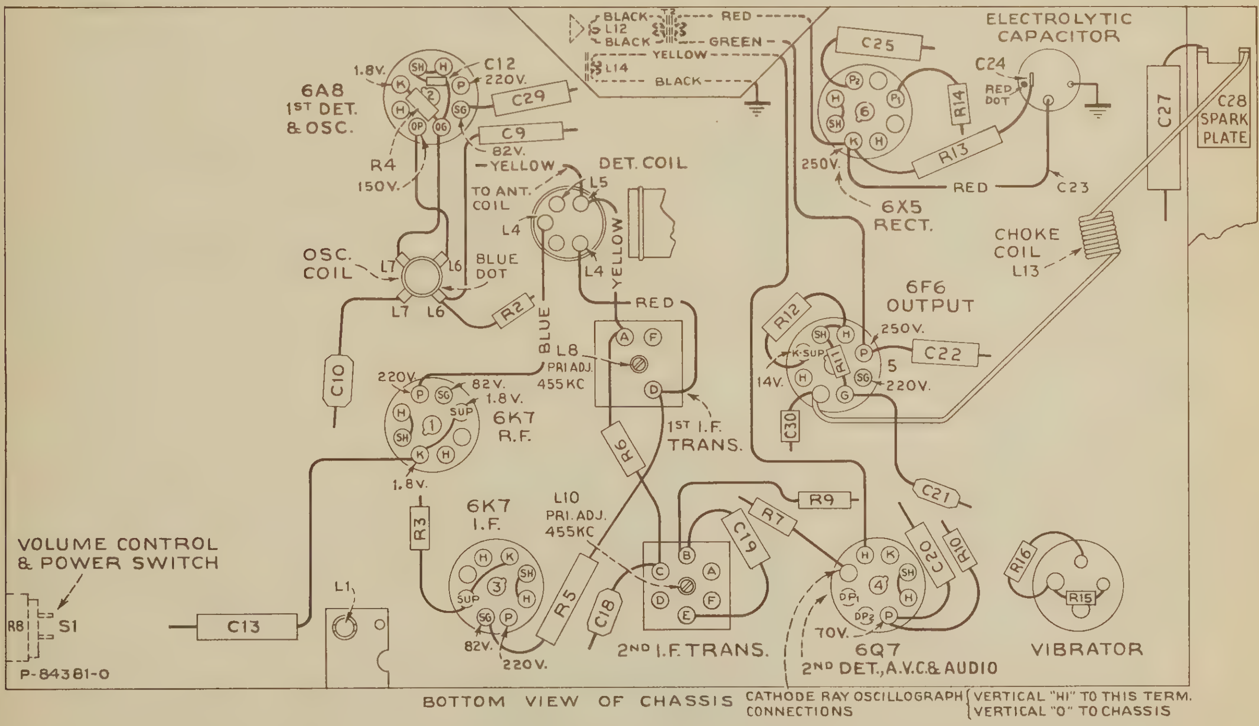


Drive Cord Hookup



Top View of Chassis

Model 9M2



Bottom View of Parts and Socket Voltages

(Measured at 6.3 volts battery supply—Volume control minimum—No signal input—)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ± 20% when the receiver is normally operative at its rated battery voltage.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
13002	Capacitor—12 mmfd. (C1)	
31729	Capacitor—43.5 mmfd. (C12)	
30904	Capacitor—100 mmfd. (C14, C15, C16, C17)	
13894	Capacitor—390 mmfd. (C21)	
30433	Capacitor—470 mmfd. (C18)	
31727	Capacitor—470 mmfd., temp. coeff. (C10)	
31730	Capacitor—820 mmfd. (C30)	
4838	Capacitor—.005 mfd. (C22)	
30626	Capacitor—.0075 mfd. (C25)	
14393	Capacitor—.01 mfd. (C2, C19, C20)	
30882	Capacitor—.05 mfd. (C13)	
4886	Capacitor—.05 mfd. (C8)	
4839	Capacitor—0.1 mfd. (C29)	
12741	Capacitor—0.5 mfd. (C27)	
31599	Capacitor—Comprising two 8 mfd. sections (C23, C24)	
31601	Coil—Antenna coil less shield (L2, L3)	
31977	Coil—Antenna filter (L1)	
31595	Coil—Oscillator coil and shield (L6, L7)	
31600	Coil—r-f coil less shield (L4, L5)	
11765	Lamp—Dial lamp	
30641	Lead—Ammeter lead (chassis end), complete with male section of fuse holder	
30540	Resistor—100 ohms, ½ watt (R15, R16)	
13428	Resistor—150 ohms, ¼ watt (R3)	
30499	Resistor—470 ohms, ½ watt (R12)	
6134	Resistor—1200 ohms, 1 watt (R13)	
12695	Resistor—15,000 ohms, ¼ watt (R14)	
13998	Resistor—22,000 ohms, ¼ watt (R2)	
13477	Resistor—27,000 ohms, 1 watt (R5)	
12454	Resistor—33,000 ohms, ¼ watt (R7)	
12286	Resistor—56,000 ohms, ¼ watt (R4)	
14983	Resistor—330,000 ohms, ¼ watt (R10)	
12285	Resistor—470,000 ohms, ¼ watt (R1, R11)	
12201	Resistor—1.5 meg., ¼ watt (R6)	
13601	Resistor—10 meg., ¼ watt (R9)	
13471	Ring—Retaining ring for coil Stock No. 31601	
3584	Ring—Retaining ring for coil Stock No. 31600	
31639	Socket—Dial lamp socket	
31319	Socket—Tube socket	
13686	Socket—Vibrator socket	
30957	Transformer—First i-f transformer (L8, L9, C14, C15)	
31593	Transformer—Second i-f transformer (L10, L11, C16, C17)	
31597	Transformer—Vibrator power transformer (T1, L15, C26)	
13688	Vibrator—Plug-in vibrator complete (L16)	
31638	Volume control and power switch (R8, S1)	
	TUNING UNIT ASSEMBLIES	
31605	Condenser—3-gang variable condenser (C3, C4, C5, C6, C7, C11, C12)	
31614	Cord—Variable condenser drive cord	
31725	Drum—Indicator drum assembly	
31610	Drum—Variable condenser drive cord drum	
31612	Gear—Variable condenser drive gear sector—fastens on cam shaft	
31645	Mechanism—Comprising 5-push button levers and cams, cam plate, and variable condenser mounting bracket, assembled	
31606	Pulley—Indicator drum pulley	
31607	Pulley—Pulley for indicator drum bracket	
4389	Screw—No. 6-32 x 3/16 in. set screw for pulley Stock No. 31606	
31613	Screw—No. 8-32 x ⅜ in. set screw for gear Stock No. 31612	
31611	Screw—No. 8-32 x ¼ in. set screw for drum Stock No. 31610	
31609	Shaft—Station selector knob shaft	
31615	Spring—Variable condenser drive cord tension spring	
30585	Spring—Push button arm tension spring	
2917	Washer—"C" washer to hold knob shaft	
31608	Washer—"C" washer to hold pulley Stock No. 31607	
	SPEAKER ASSEMBLIES	
	Speaker 84391-1	
30782	Cone—Speaker cone and voice coil (L12)	
30781	Speaker complete	
30783	Transformer—Output transformer (T2)	
	SPEAKER ASSEMBLIES	
	Speaker 84391-3	
31771	Cone—Speaker cone and voice coil (L12)	
31770	Speaker complete	
31772	Transformer—Output transformer (T2)	
	MISCELLANEOUS ASSEMBLIES	
4289	Body—Fuse holder body for ammeter lead	
31657	Button—Push button	
5025	Capacitor—Generator capacitor	
31653	Case—Complete receiver case only—less name plate, and dial scale	
4291	Clip—Spring clip for ammeter lead	
31456	Covers—8-protective celluloid covers for call letter markers	
31655	Dial—Dial scale and holder	
4286	Ferrule—Bushing and ferrule for fuse holder	
5023	Fuse—15 amp.	
4290	Insulator—Insulating sleeve for fuse holder	
31659	Knob—Station selector or volume control knob	
7766	Lead—Ammeter lead complete with clip and fuse holder	
31589	Markers—One set call letter markers for push buttons	
31662	Mounting—Complete set of mounting brackets, strap, washers, screws, bolts, and nuts	
31661	Plate—Name plate	
31646	Spring—Retaining spring for knobs	
4284	Spring—Spring for fuse holder	
5024	Suppressor—Distributor suppressor	
4285	Washer—Insulating washer for fuse holder	

RCA Victor

MODEL 5Q2X

Chassis No. RC-325-D

Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)	540-1,550 kc	(555-193 m)
"Medium Wave" (B)	2.3-7.0 mc	(130-42.8 m)
"Short Wave" (C)	7.0-22.0 mc	(42.8-13.6 m)

INTERMEDIATE FREQUENCY .... 455 kc

RADIOTRON COMPLEMENT

(1)	RCA-6K8	First Detector—Oscillator
(2)	RCA-6K7	I-F Amplifier
(3)	RCA-6Q7-G	Second Detector, A.V.C., and A-F Amp.
(4)	RCA-25L6-G	Power Output
(5)	RCA-25Z6-G	Half-Wave Rectifier

PILOT LAMPS (2) .... Mazda 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

(A-C Operation)	
Undistorted	1.7 watts
Maximum	2.7 watts
(D-C Operation)	
Undistorted	1.4 watts
Maximum	2.3 watts

LOUDSPEAKER

Type	8-inch Electrodynamic
V.C. Impedance	2.2 ohms at 400 cycles

POWER SUPPLY RATINGS

A-C Rating	200-250 volts 50/60 cycles, 115 watts
D-C Rating	200-250 volts direct current, 105 watts

Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	$17\frac{3}{8}$	13	9
Chassis Base Dimensions (inches)	$2\frac{1}{2}$	$9\frac{1}{2}$	$7\frac{1}{2}$

Over-all Chassis Height .... $7\frac{3}{16}$ inches

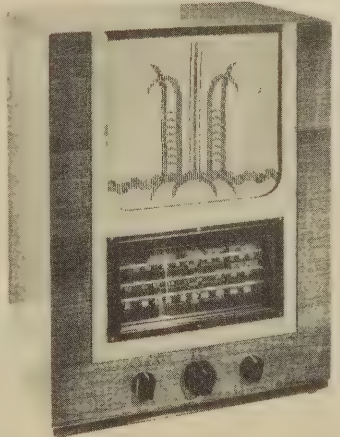
Weight .... Net $21\frac{1}{4}$ pounds; Shipping 26 pounds

Tuning Drive Ratio .... 12 to 1

General Description

Model 5Q2X is a three-band table-type superheterodyne receiver. It is designed to cover the standard broadcast range of 540 to 1,550 kilocycles, and the short-wave range from 2.3 to 22 megacycles.

Features of design include: Magnetite-core i-f transformers; magnetite-core "A" band oscillator coil; air-core trimmer capacitors; automatic volume control; aural-compensated volume control; continuously-variable high-frequency tone control; straight-line dial; band indicator in dial; dust-proof electrodynamic loudspeaker.

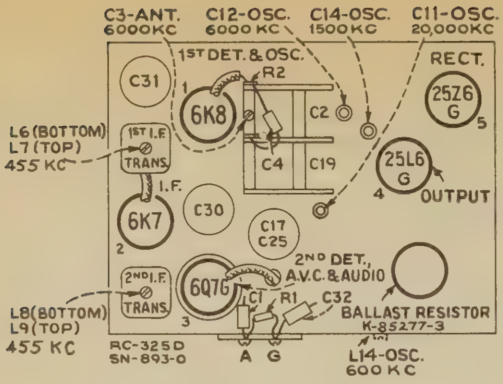


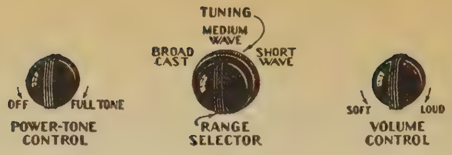
CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

First Edition

Trademark "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Printed in U. S. A.





Above—Location of Controls

At Left—Tube and Trimmer Locations

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L8 and L9 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L6 and L7 (1st I-F Trans.)
3	Antenna Terminal in series with 300 ohms	6 mc	6 mc "B" band	C12 (osc.)* C3 (ant.)†
4	Antenna Terminal in series with 300 ohms	20 mc	20 mc "C" band	C11 (osc.)** (Rock In)
5	Antenna Terminal in series with 200 mmf.	600 kc	600 kc "A" band	L14 (osc.)
6	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C14 (osc.) (Rock In)
7	Repeat steps 5 and 6.			

* Use **minimum** capacity peak if two peaks can be obtained.

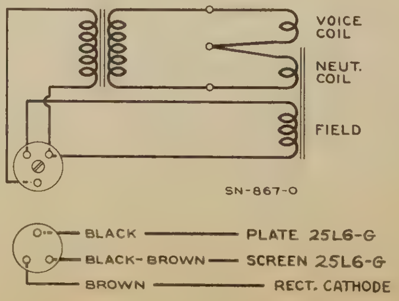
† After adjusting C3, check to determine that C12 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

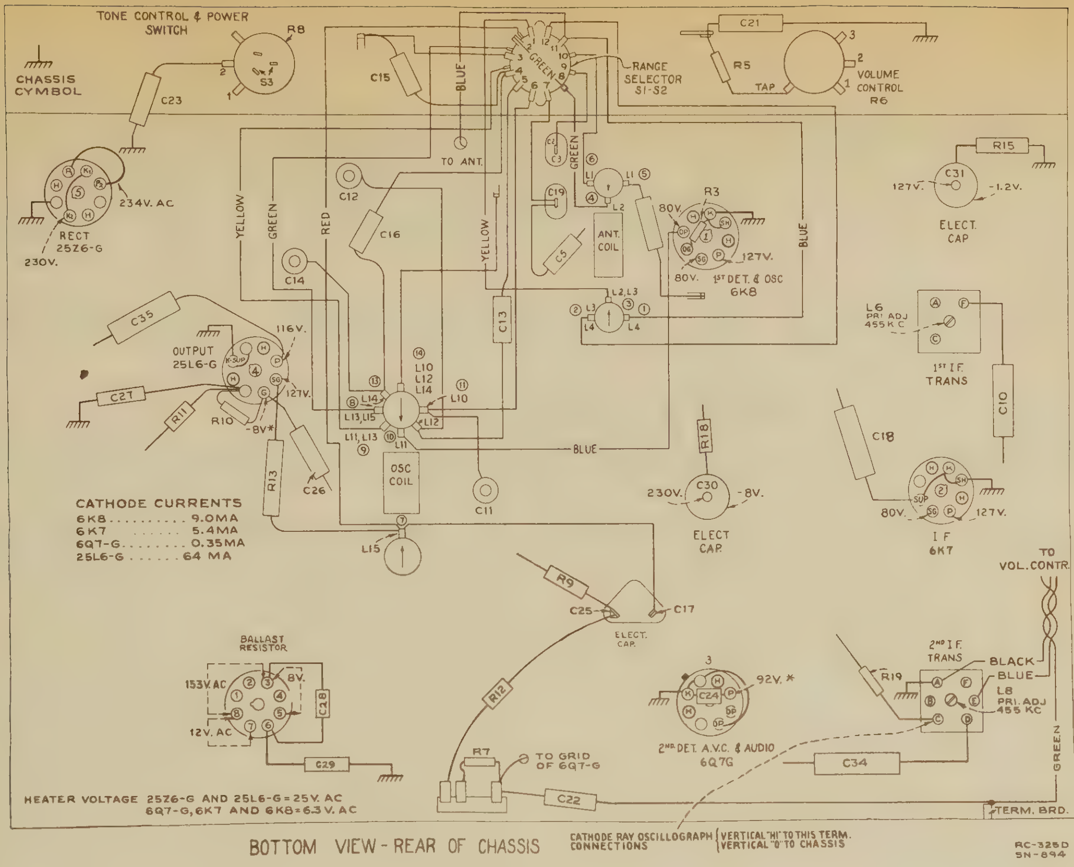
** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on **"A"** and **"B"** bands, and 455 kc **below** the signal on **"C"** band.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

At Right—Connections and Colors of Speaker and Cable

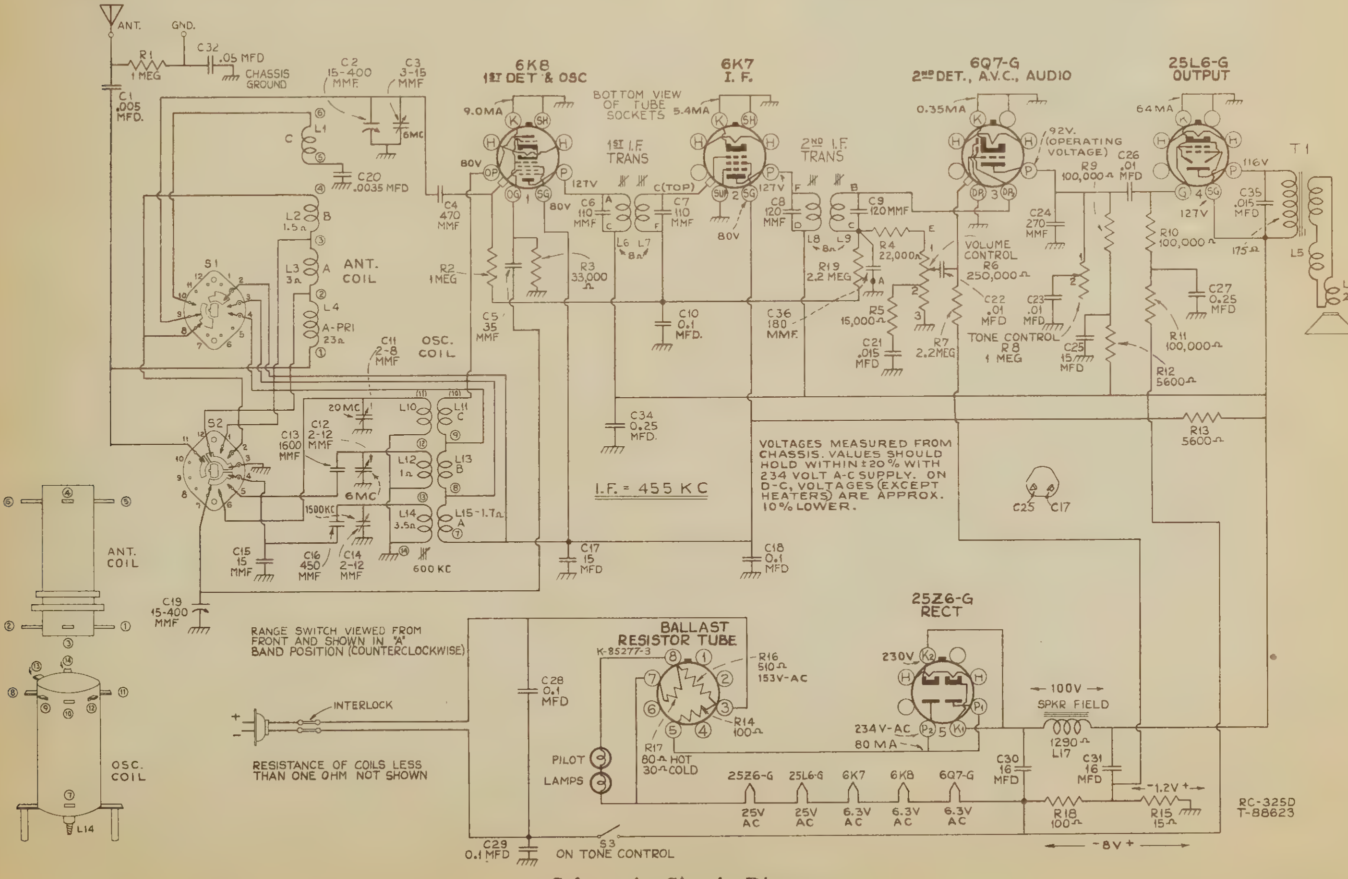




R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 234-volt a-c supply.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Schematic Circuit Diagram

Precautionary Lead Dress.—

1. Leads on C20 ("C" band tracking condenser) must be as short as possible.
2. Dress blue lead from oscillator plate away from all parts.
3. Dress speaker cable away from ballast tube.
4. Dress C22 (1st A.F. coupling condenser) against rear apron.

Power Supply Polarity.—

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	CHASSIS ASSEMBLIES (RC325D)	
14380	Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft	
32247	Ballast—Ballast tube resistor (R14, R16, R17)	
14352	Belt—Station selector drive belt	
13216	Board—Antenna and ground terminal board	
12607	Cap—Top shield cap for first i-f transformer	
12581	Cap—Top shield cap for second i-f transformer	
30314	Cap—Grid contact cap	
12807	Capacitor—Adjustable trimmer (short) (C11)	
12714	Capacitor—Adjustable trimmer (medium) (C12, C14)	
12896	Capacitor—15 mmfd. (C15)	
12948	Capacitor—35 mmfd. (C5)	
14262	Capacitor—110 mmfd. (C6, C7)	
12404	Capacitor—120 mmfd. (C8, C9)	
12488	Capacitor—270 mmfd. (C24)	
31954	Capacitor—450 mmfd. (C16)	
30433	Capacitor—470 mmfd. (C4)	
30592	Capacitor—1,600 mmfd. (C13)	
30303	Capacitor—.0035 mfd. (C20)	
4838	Capacitor—.005 mfd. (C1)	
14393	Capacitor—.01 mfd. (C22, C23, C26)	
11315	Capacitor—.015 mfd. (C21, C35)	
4886	Capacitor—.05 mmfd. (C32)	
4839	Capacitor—0.1 mfd. (C10, C18, C28, C29)	
30965	Capacitor—0.25 mfd. (C34, C27)	
14377	Capacitor—16 mfd. (C31)	
32222	Capacitor Pack—Comprising two sections, each 15 mfd. (C17, C25)	
14773	Capacitor—16 mfd. (covered can) (C30)	
4358	Clamp—Mounting clamp for capacitor pack, Stock No. 30577	
30621	Coil—Antenna coil (L1, L2, L3, L4)	
30579	Coil—Oscillator coil (L10, L11, L12, L13, L14, L15)	
30573	Condenser—2-gang variable tuning condenser (C2, C3, C19)	
30586	Cord—Station selector indicator pointer cord	
12800	Core—Adjustable core and stud for oscillator coil	
12006	Core—Adjustable core and stud for i-f transformers	
31741	Dial—Station selector dial scale (glass)	
30581	Disc—Band indicator disc with celluloid window	
30572	Drive—Vernier drive shaft and pinion gear for variable condenser	
30584	Drum—Station-selector drive-cord drum with set screws	
30583	Indicator—Station-selector indicator pointer and holder assembly	
31480	Lamp—Dial lamp	
14028	Nut—Jamb nut for adjustable capacitor, Stock Nos. 12807 and 12714	
5119	Plug—3-contact female for speaker cable	
30587	Pulley—Drive-belt pulley for condenser shaft	
14636	Pulley—Drive-belt idler pulley	
32247	Resistor—Ballast tube (R14, R16, R17)	
11565	Resistor—15 ohms, ¼ watt (R15)	
31215	Resistor—100 ohms, 1 watt (R18)	
11298	Resistor—5,600 ohms, 1 watt (R13)	
13714	Resistor—5,600 ohms, ¼ watt (R12)	

STOCK No.	DESCRIPTION	
12695	Resistor—15,000 ohms, ¼ watt (R5)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12454	Resistor—33,000 ohms, ¼ watt (R3)	
14560	Resistor—100,000 ohms, ¼ watt (R9, R10, R11)	
2546	Resistor—1 meg., ¼ watt (R1, R2)	
12679	Resistor—2.2 meg., ¼ watt (R7, R19)	
14887	Retainer—Band indicator disc retainer	
14343	Ring—Retaining ring for range switch shaft	
14350	Screw—No. 8-32 x 3/16-inch square-head set screw for drum, Stock No. 30584; arm, Stock No. 14380, and pulley, Stock No. 30587	
14340	Shaft—Drive pulley and knob shaft—fastens on range-switch shaft	
3682	Shield—Tube shield	
12008	Shield—I-f transformer shield can	
5119	Socket—3-contact speaker cable socket	
31251	Socket—8-contact tube socket	
31365	Socket—Dial lamp socket	
12007	Spring—Retaining spring for core, Stock No. 12006	
30585	Spring—Tension spring for pointer cord	
30588	Spring—Tension spring for idler pulley	
30620	Switch—Range switch (S1, S2)	
30574	Tone control and power switch (S3, R8)	
14376	Transformer—First i-f transformer (L6, L7, C6, C7)	
14308	Transformer—Second i-f transformer (L8, L9, C8, C9, R4, R19)	
32247	Tube—Ballast tube (R14, R16, R17)	
30575	Volume Controls (R6)	
	SPEAKER ASSEMBLIES (RL-63F-1)	
14356	Board—3-contact speaker terminal board	
13866	Cap—Cone center dust cap	
12012	Coil—Field coil (L17)	
11469	Coil—Hum neutralizing coil (L5)	
31310	Cone—Speaker cone and dust cap (L16)	
5118	Plug—3-contact male plug for speaker	
32248	Speaker—Complete	
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	
14628	Transformer—Output transformer (T1)	
14357	Washer—Spring washer to hold field coil	
	MISCELLANEOUS ASSEMBLIES	
11823	Cord—Power cord complete with male and female plugs	
31742	Escutcheon—Dial escutcheon and crystal	
31803	Knob—Tone control, volume control or range switch knob	
31743	Knob—Station selector knob	
11979	Plug—2-contact male for chassis power leads	
14267	Screw—Chassis mounting screw and washer assembly	
12993	Screw—No. 8-32 x ⅜-inch set screw for knob, Stock No. 31803	
11349	Spring—Retaining spring for knob, Stock No. 13907	
4982	Spring—Retaining spring for knob, Stock No. 31743	

RCA Victor

"Little Nipper" Models 9SX-1, -2, -3, -4, -5, -6, -7, and -8

Five-Tube, Two-Band, AC-DC Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 41—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast (A)	540-1,720 kc
Short Wave (B)	2.3-6.25 mc
INTERMEDIATE FREQUENCY	456 kc

TUBE COMPLEMENT

(1) RCA-6A8	1st-Detector—Oscillator
(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7	2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6	Power Output
(5) RCA-25Z6	Half-Wave Rectifier
Dial Lamp (1)	Mazda 40, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating	105-125 volts, 50-60 cycles, 50 watts
D-C Rating	105-125 volts, direct current, 50 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted	1.5 watt
Maximum	2.0 watts

LOUDSPEAKER

Type	4-inch Electrodynamic

	Height	Width	Depth
Cabinet Dimensions	4¾ inches	8 inches	4½ inches
Weight		7 pounds (shipping)	

Model 9SX-1, Molded cabinet, walnut finish, ivory knobs.

Model 9SX-2, Molded cabinet, walnut body, ivory front, walnut knobs.

Model 9SX-3, Molded cabinet, ivory finish, red knobs.

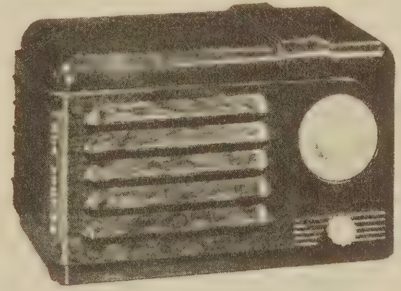
Model 9SX-4, Molded cabinet, red body, ivory front, red knobs.

Model 9SX-5, Molded cabinet, black body, marble front, jet knobs.

Model 9SX-6, Molded cabinet, blue body, onyx front, blue knobs.

Model 9SX-7, Molded cabinet, onyx finish, maroon knobs.

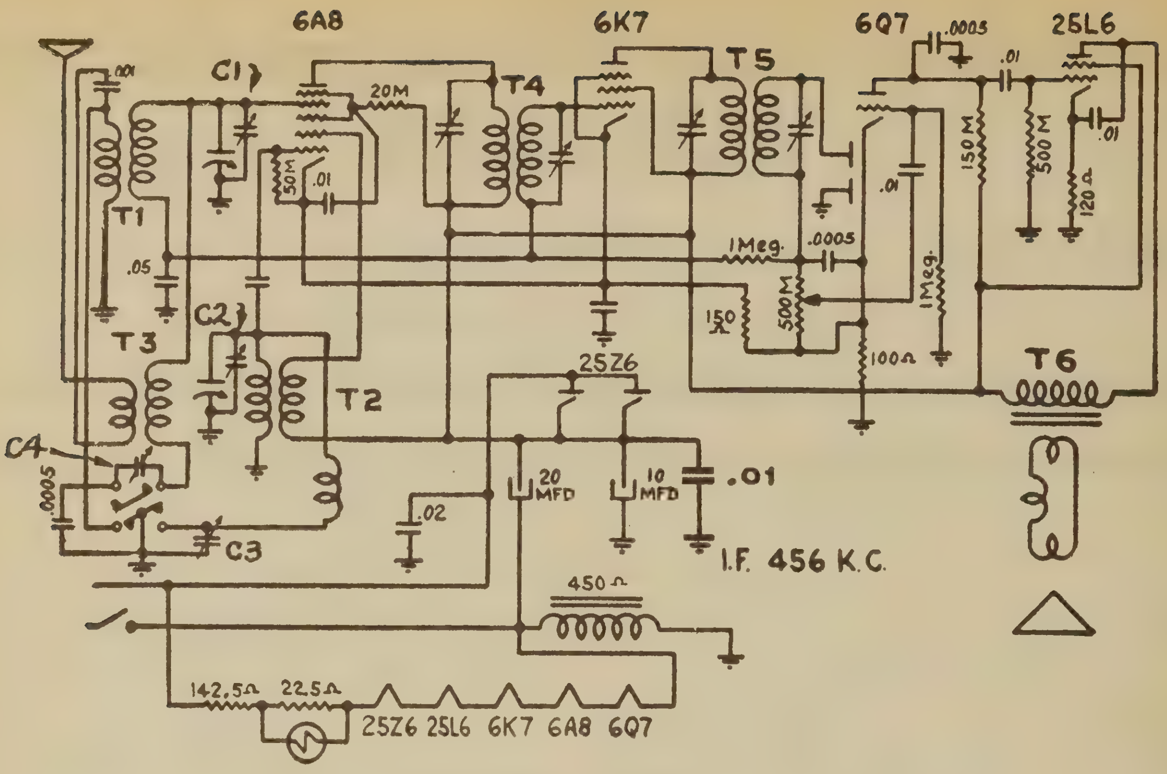
Model 9SX-8, Molded cabinet, marble finish, jet knobs.



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

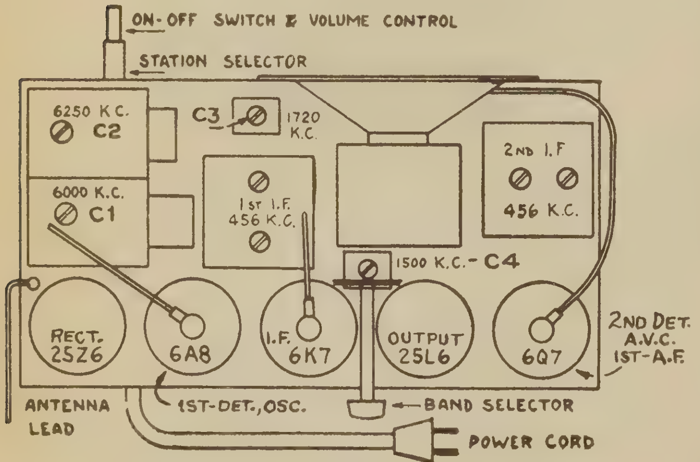
STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
31193	Antenna—35 ft. antenna wire—wound on reel		32444	Knob—Station selector knob—Black	
X-569	Cabinet—Walnut and Ivory cabinet (9SX-2)		32445	Knob—Station selector knob—Maroon	
X-572	Cabinet—Blue and Onyx cabinet (9SX-6)		32446	Knob—Volume control or range switch knob—Walnut	
X-575	Cabinet—Onyx cabinet (9SX-7)		32447	Knob—Volume control or range switch knob—Ivory	
X-570	Cabinet—Walnut cabinet (9SX-1)		32448	Knob—Volume control or range switch knob—Red	
X-573	Cabinet—Ivory cabinet (9SX-3)		32449	Knob—Volume control or range switch knob—Blue	
X-576	Cabinet—Marble cabinet (9SX-8)		32450	Knob—Volume control or range switch knob—Black	
X-571	Cabinet—Red and Ivory cabinet (9SX-4)		32451	Knob—Volume control or range switch knob—Maroon	
X-574	Cabinet—Black and Marble cabinet (9SX-5)		4340	Lamp—Dial lamp—Mazda 40	
32392	Capacitor—.0005 mfd.		30540	Resistor—100 ohms, 1/3 watt	
32396	Capacitor—.0005 mfd. mica capacitor		32397	Resistor—120 ohms, 1/2 watt, Flexohm	
32393	Capacitor—.001 mfd.		30880	Resistor—150 ohms, 1/3 watt	
4858	Capacitor—.01 mfd.		30492	Resistor—20,000 ohms, 1/3 watt	
31796	Capacitor—.02 mfd.		3594	Resistor—50,000 ohms, 1/3 watt	
4886	Capacitor—.05 mfd.		30493	Resistor—150,000 ohms, 1/3 watt	
4839	Capacitor—0.1 mfd.		3048	Resistor—500,000 ohms, 1/3 watt	
32386	Capacitor—10-20 mfd., Electrolytic		30652	Resistor—1 megohm, 1/3 watt	
32394	Capacitor—Trimmer capacitor 1,500 K.C. adjustment (C4)		32398	Screw—No. 6-32 fibre screw—back cover mounting	
32395	Capacitor—Trimmer capacitor 1,720 K.C. adjustment (C3)		32390	Socket—8-prong moulded Octal tube socket.	
32387	Coil—Antenna coil (T1)		32380	Speaker—Dynamic loudspeaker	
32388	Coil—Oscillator coil (T2)		32381	Transformer—Output transformer (T6)	
32389	Coil—Short wave antenna coil (T3)		32382	Transformer—First i.f. transformer (T4)	
32379	Condenser—2-gang variable tuning condenser		32383	Transformer—Second i.f. transformer (T5)	
32384	Cord—Resistance power cord		32385	Volume Control and Switch	
32399	Dial—Indicator dial scale				
32440	Knob—Station selector knob—Walnut				
32441	Knob—Station selector knob—Ivory				
32442	Knob—Station selector knob—Red				
32443	Knob—Station selector knob—Blue				



Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

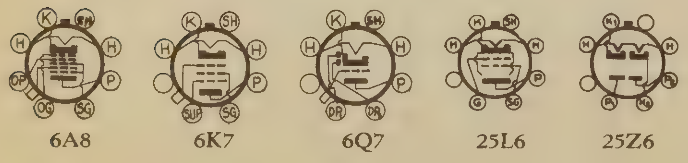
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis through .01 mfd., and keep the output as low as possible to avoid a-v-c action.



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6K7 I-F grid cap, in series with .01 mfd.	456 kc	Quiet point between 1,650-1,720 kc, with range switch at broadcast position (counter-clockwise from rear).	Two trimmers on 2nd I-F trans.
2	6A8 1st-Det. grid cap, in series with .01 mfd.	456 kc		Two trimmers on 1st I-F trans.
3	Antenna Term. on antenna trans., in series with 400 ohms.	6,250 kc	Max. clockwise (out of mesh) "B" band	C2 (osc. gang trimmer)*
4		6,000 kc	Resonance on 6,000 kc signal	C1 (ant. gang trimmer)**
5	Antenna Term. on antenna trans., in series with 90 mmf.	1,720 kc	Max. clockwise (out of mesh)	C3
6		1,500 kc	Resonance on 1,500 kc signal.	C4

* Use minimum capacity peak if two peaks can be obtained.

** After this adjustment, check for image by leaving test oscillator at 6,000 kc, and shifting receiver dial to 5,088 kc, where a weaker signal should be received.



6A8 6K7 6Q7 25L6 25Z6

Bottom view of tube sockets

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

RCA

RCA Victor

"Little Nipper—2nd" Models 9TX-1, -2, -3, -4, and -5

Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 42—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGE .... 530-1,720 kc

TUBE COMPLEMENT

(1)	RCA-6A8	1st-Detector—Oscillator
(2)	RCA-6SK7	I-F Amplifier
(3)	RCA-6SQ7	2nd-Det., 1st A-F, and A.V.C.
(4)	RCA-25L6	Power Output
(5)	RCA-25Z6	Half-Wave Rectifier
	Dial Lamp (1)	Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating .... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating .... 105-125 volts, direct current, 50 watts

INTERMEDIATE FREQUENCY .... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted .... 1.5 watts
Maximum .... 2.0 watts

LOUDSPEAKER

Type .... 4-inch Electrodynamic

Cabinet Dimensions		Height	Width	Depth
	9TX-1, -2	5 inches	8½ inches	4¾ inches
	9TX-3	5¾ inches	8⅞ inches	4¾ inches
	9TX-4, -5	5½ inches	8½ inches	4½ inches

Weight .... 7 pounds (shipping)

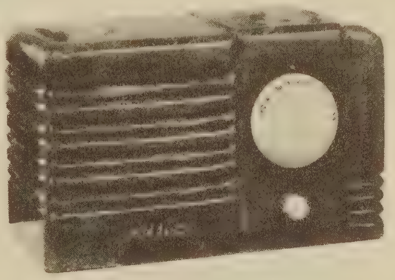
Model 9TX-1, Molded cabinet, walnut finish, mottled tan dial and knob.

Model 9TX-2, Molded cabinet, ivory finish, ivory dial and knob.

Model 9TX-3, Two-tone wood cabinet, piano finish, mottled tan dial and knob.

Model 9TX-4, Molded Arizona cream onyx cabinet, maroon dial and knob.

Model 9TX-5, Molded green onyx cabinet, ivory dial and knob.



Replacement Parts

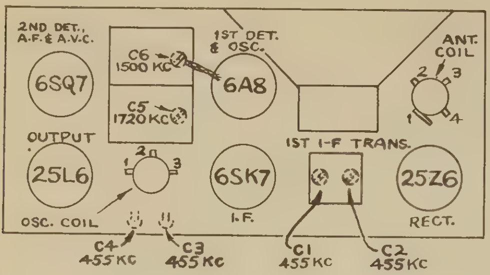
Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
X-587	Cabinet for 9TX1 (Walnut finish)		32570	Knob—Maroon volume control knob for 9TX4	
X-588	Cabinet for 9TX2 (Ivory finish)		32571	Knob—Tan volume control knob for 9TX1 and 9TX3	
X-589	Cabinet for 9TX3 (Wood, Mahogany finish)		31480	Lamp—Dial lamp—Mazda 47	
X-590	Cabinet for 9TX4 (Arizona Cream Onyx finish)		12409	Lead—Antenna lead	
X-591	Cabinet for 9TX5 (Brazilian Green Onyx finish)		14439	Resistor—100 ohms, ¼ watt	
32572	Coil—Antenna coil		32535	Resistor—120 ohms, wire wound	
32573	Coil—Oscillator coil		12412	Resistor—47,000 ohms, ¼ watt	
13057	Condenser—60 mmfd.		12264	Resistor—220,000 ohms, ¼ watt	
12488	Condenser—250 mmfd.		12285	Resistor—470,000 ohms, ¼ watt	
12952	Condenser—300 mmfd.		12679	Resistor—2.2 meg., ¼ watt	
30433	Condenser—400 mmfd.		13601	Resistor—10 meg., ¼ watt	
4858	Condenser—.01 mfd.		31199	Shield—Dial lamp shield — Models 9TX1, 9TX2, 9TX4, and 9TX5	
4870	Condenser—.025 mfd.		32537	Socket—Tube socket	
4886	Condenser—.05 mfd.		32575	Speaker—Complete with transformer	
4839	Condenser—0.1 mfd.		32574	Transformer—First i.f. transformer	
32576	Condenser—Electrolytic, one section 20 mfd., one section 12 mfd.		32581	Transformer—Output transformer	
32579	Condenser—Variable tuning condenser		32534	Transformer—Second i.f. transformer	
32577	Cord—Resistance power cord		32578	Volume Control and Power Switch—Models 9TX1, 9TX2, and 9TX3	
32566	Dial—Ivory dial for 9TX2 and 9TX5		32580	Volume Control and Power Switch—Models 9TX4 and 9TX5	
32567	Dial—Maroon dial for 9TX4				
32568	Dial—Tan dial for 9TX1 and 9TX3				
32569	Knob—Ivory volume control knob for 9TX2 and 9TX5				

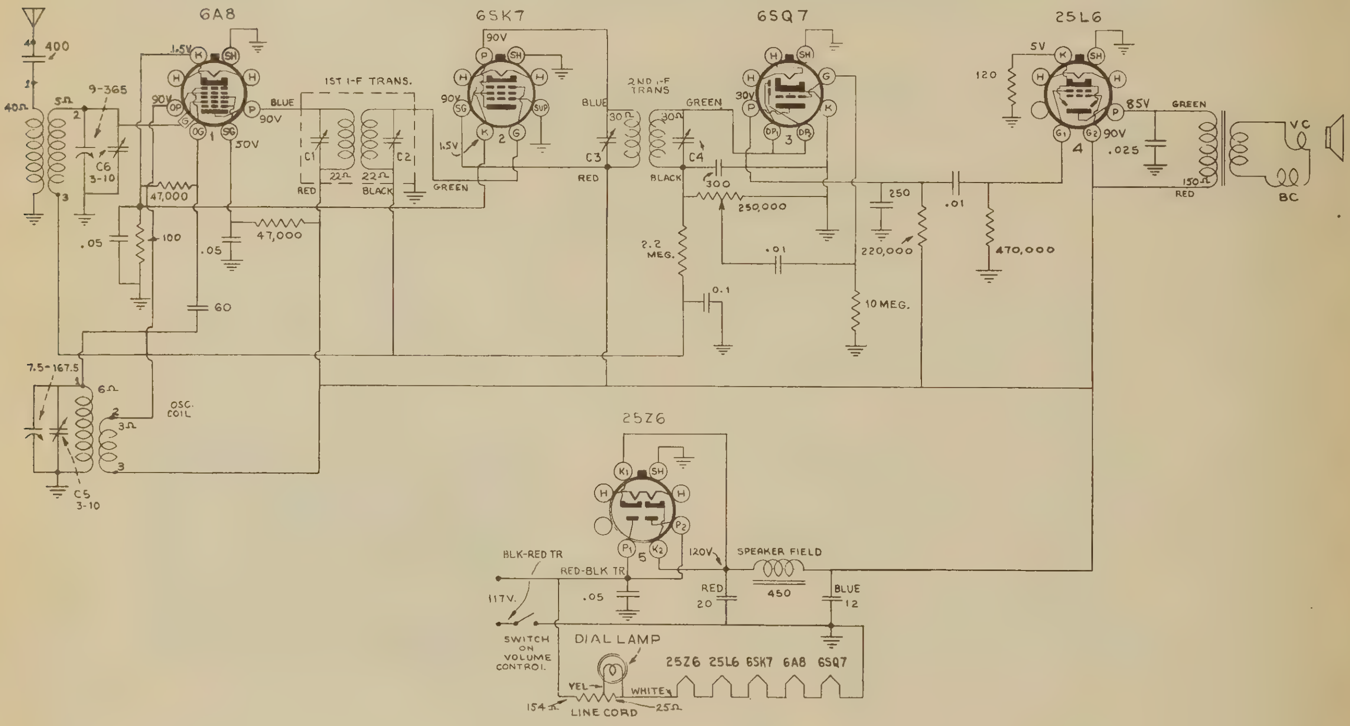
Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers).
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)



Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.
3. Keep leads away from adjusting screws to allow easy access.
4. Dress output plate lead along front apron and away from 6A8.
5. Dress parts at ends of chassis to clear cabinet bosses.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

First Edition

Printed in U. S. A.

RCA Victor

MODEL 9X

Four-Tube, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 16—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range.............................. 540-1,760 kc
Alignment Frequency..................... 1,760 kc (ant., det.)

Radiotron Complement

(1) RCA-6K7.................................... R-F Amp.
(2) RCA-6J7.................................... Detector
(3) RCA-25L6.................................... Output
(4) RCA-25Z6.................................... Rectifier

Dial Lamp................. Mazda No. 40, 6.3 volts, .15 amps.

Power Supply Ratings

A-C Rating.............. 105-125 volts, 50-60 cycles, 50 watts
D-C Rating.............................. 105-125 volts, 50 watts

Power Output (125-volt, 60-cycle supply)

Undistorted.. 1.0 watt
Maximum.. 1.5 watts

Loudspeaker

Type.................................. 3-inch Electrodynamic
Voice-Coil Impedance..................... 3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions.........	5¼ inches ..	7½ inches ..	4-7/16 in.
Chassis Base...............	1⅛ inches ..	5⅝ inches ..	3⅝ inches

Over-all Chassis Height.................................. 4 inches
Weight........................ 4¼ lbs. (Net), 5 lbs. (Shipping)
Operating Controls...... (1) Power Switch—Volume; (2) Tuning

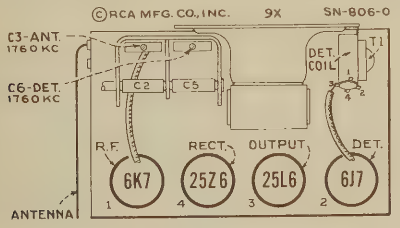
Alignment Procedure

CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Reel up the antenna wire, and keep it away from chassis during alignment. Connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

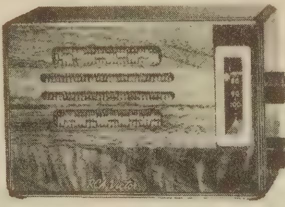
Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Pre-setting Dial.—With gang condenser rotor plates turned full in for maximum capacity, loosen dial-drum set-screw, and turn drum so that the top edge of dial (low-frequency end) is approximately 1/16-in. below level of gang frame, and tighten set-screw.



Left—Figure 1 Radiotron Locations

Right—Model 9X



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30883	Capacitor—300 mmfd. (C9)................	
14393	Capacitor—.01 mfd. (C1, C8, C10, C11).....	
4870	Capacitor—.025 mfd. (C7)	
30882	Capacitor—.05 mfd. (C4)	
30965	Capacitor—0.25 mfd. (C12)	
31323	Capacitor—16 mfd. (C13, C14).............	
31316	Coil—Antenna coil (L1, L2)...............	
30876	Coil—Detector coil (L3, L4)..............	
31321	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)......................	
31320	Cord—Resistance power cord (R7)..........	
31314	Dial—Station selector dial scale............	
31315	Drum—Station selector dial scale drum—less scale	
4340	Lamp—Dial lamp..........................	
31193	Lead—Antenna lead—approx. 25 ft. long.....	
13428	Resistor—150 ohms, ¼ watt (R6)............	
12285	Resistor—470,000 ohms, ¼ watt (R4)........	
13730	Resistor—1 Meg., ¼ watt (R5)..............	
12679	Resistor—2.2 Meg., ¼ watt (R3)............	
13601	Resistor—10 Meg., ¼ watt (R2).............	
4387	Screw—No. 6-32 headless set screw for drum Stock No. 31315.......................	
31318	Socket—Dial lamp socket..................	
31319	Socket—Radiotron socket..................	
31317	Transformer—Output transformer (T1).......	
31322	Volume control and power switch (R1, S1)...	
	SPEAKER ASSEMBLIES (86309-1)	
31325	Cone—Speaker cone and voice coil (L5)......	
31324	Speaker—Complete	
	MISCELLANEOUS ASSEMBLIES	
31326	Escutcheon—Station selector dial escutcheon..	
31204	Knob—Station selector, or volume control knob	
30900	Spring—Retaining spring for knob, Stock No. 31204	

First Edition

Printed in U. S. A.

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Precautionary Lead Dress

1. Dress detector grid lead close to top of speaker chassis.
2. Dress lead from grid of 6K7 to gang condenser away from detector section of gang, and clear of rotor plates.
3. Dress speaker leads close to, but not touching, cone.
4. Dress pilot lamp leads close to top of chassis, and clear of rotor.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

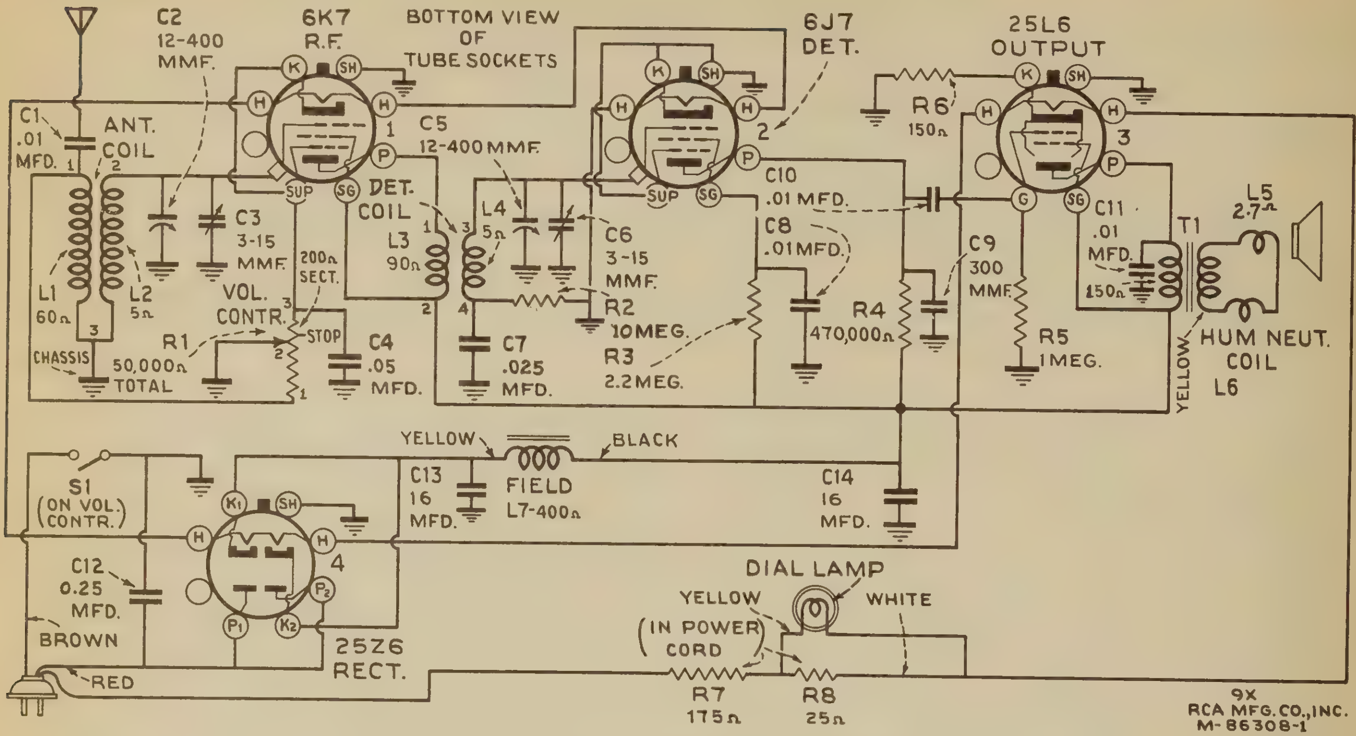


Figure 2—Schematic Circuit Diagram

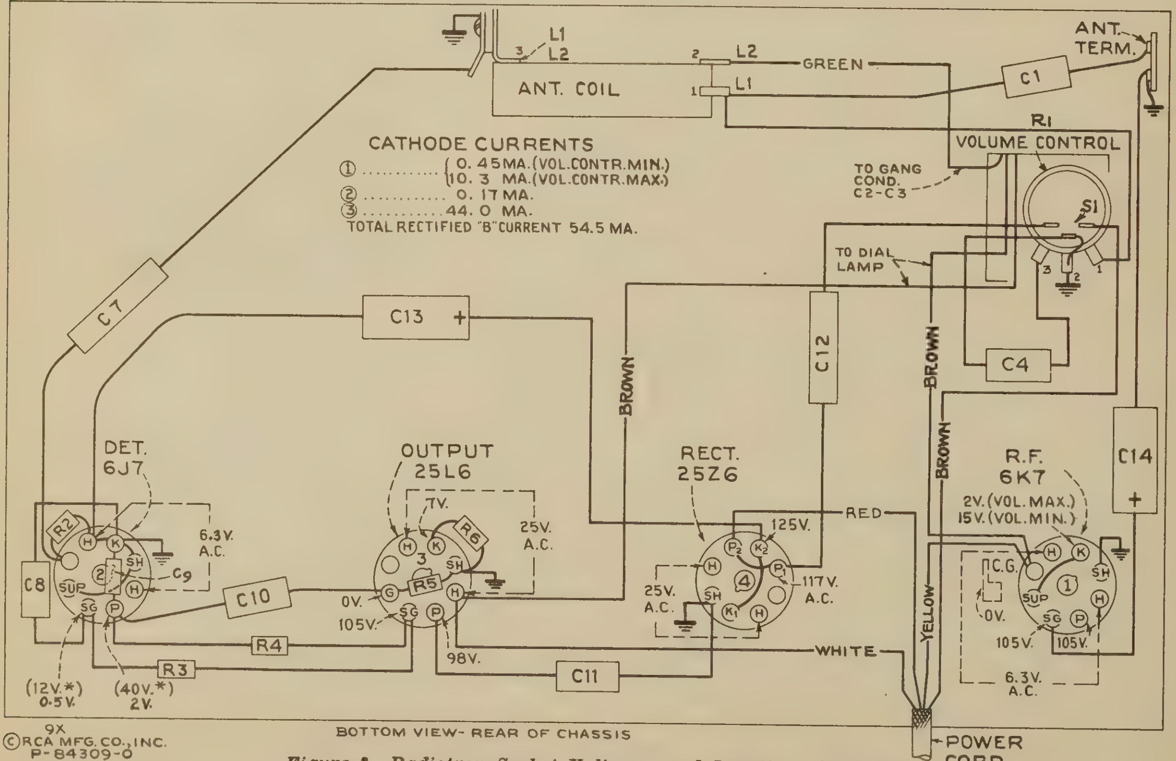


Figure 3—Radiotron Socket Voltages, and Location of Parts

* **Note:** Values with (*) are operating voltages.
Values not starred are actual **measured** voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

RCA Victor

MODELS 9X6, 9X11, 9X12, 9X13, and 9X14

Chassis No. RC-350A

Four-Tube, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 16A—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range.................................. 540-1,760 kc
Alignment Frequency...................... 1,760 kc (ant., det.)

RCA TUBE COMPLEMENT

(1) RCA-6K7.................................... R-F Amp.
(2) RCA-6J7.................................... Detector
(3) RCA-25L6.................................... Output
(4) RCA-25Z6.................................... Rectifier

Dial Lamp.................. Mazda No. 40, 6.3 volts, .15 amps.

POWER SUPPLY RATINGS

A-C Rating.............. 105-125 volts, 50-60 cycles, 50 watts
D-C Rating.......................... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted.. 1.0 watt
Maximum.. 1.5 watts

LOUDSPEAKER

Type.................................. 3-inch Electrodynamic
Voice-Coil Impedance.................... 3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions.........	5¼ inches ..	7½ inches ..	4-7/16 in.
Chassis Base..............	1⅛ inches ..	5⅝ inches ..	3⅝ inches

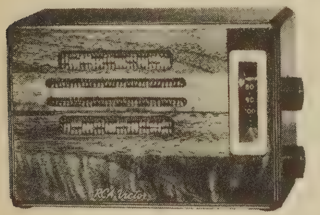
Over-all Chassis Height.......................... 4 inches
Weight........................ 4¼ lbs. (Net), 5 lbs. (Shipping)
Operating Controls...... (1) Power Switch—Volume; (2) Tuning

Alignment Procedure

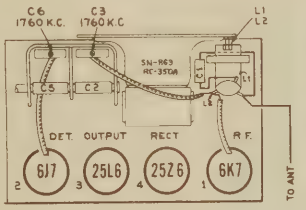
Reel up the antenna wire, and keep it away from chassis during alignment. Connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

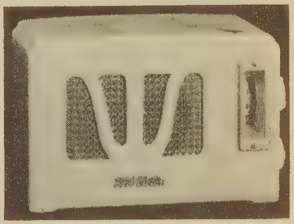
Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscilator.

Pre-setting Dial.—With gang condenser rotor plates turned full in for maximum capacity, loosen dial-drum set-screw, and turn drum so that the top edge of dial (low-frequency end) is approximately 1/16-in. below level of gang frame, and tighten set-screw.



Model 9X6, wood, walnut.
Model 9X11, catalin, Brazilian onyx, green.
Model 9X12, catalin, jet black.
Model 9X13, catalin, Arizona onyx, cream.
Model 9X14, catalin, burl onyx, brown.





Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
14392	Capacitor—4.7 mmfd. (C17).................	
30883	Capacitor—300 mmfd. (C9).................	
14393	Capacitor—.01 mfd. (C15).................	
4870	Capacitor—.025 mfd. (C7).................	
30882	Capacitor—.05 mfd. (C4).................	
30899	Capacitor—0.1 mfd. (C12).................	
12484	Capacitor—0.25 mfd. (C16).................	
31323	Capacitor—16 mfd. (C13, C14).............	
30875	Coil—Antenna coil (L1, L2)...............	
32027	Coil—R-f coil (L3, L4)...................	
31321	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)......................	
32030	Cord—Resistance power cord (R7)..........	
31314	Dial—Station selector dial scale..........	
31315	Drum—Station selector dial scale drum—less scale	
4340	Lamp—Dial lamp...........................	
31193	Lead—Antenna lead—approximately 25 ft. long.	
32028	Resistor—25 ohms, 3 watts, wire wound (R8).	
13428	Resistor—150 ohms, ¼ watt (R6)...........	
13734	Resistor—120,000 ohms, ¼ watt (R9).......	
12285	Resistor—470,000 ohms, ¼ watt (R4).......	
13730	Resistor—1 meg., ¼ watt (R5).............	
12679	Resistor—2.2 meg., ¼ watt (R3)...........	

STOCK No.	DESCRIPTION	
13601	Resistor—10 meg., ¼ watt (R2)............	
4387	Screw—No. 6-32 headless set screw for drum, Stock No. 31315.........................	
31318	Socket—Dial lamp socket..................	
31319	Socket—Tube socket.......................	
32029	Transformer—Output transformer (T1)......	
32026	Volume control and power switch (R1, S1)....	
	SPEAKER ASSEMBLIES (86309-2)	
31325	Cone—Speaker cone and voice coil (L5)......	
32025	Speaker complete..........................	
	MISCELLANEOUS ASSEMBLIES	
31326	Escutcheon—Station selector dial escutcheon—Model 9X6..........................	
31915	Escutcheon—Station selector dial escutcheon—Models 9X11, 9X12, 9X13 and 9X14 only..	
31914	Knob—Station selector or volume control knob—Models 9X12 and 9X13 only............	
31204	Knob—Station selector or volume control knob—Models 9X6, 9X11 and 9X14 only.......	
30900	Spring—Retaining spring for knobs.........	

Precautionary Lead Dress

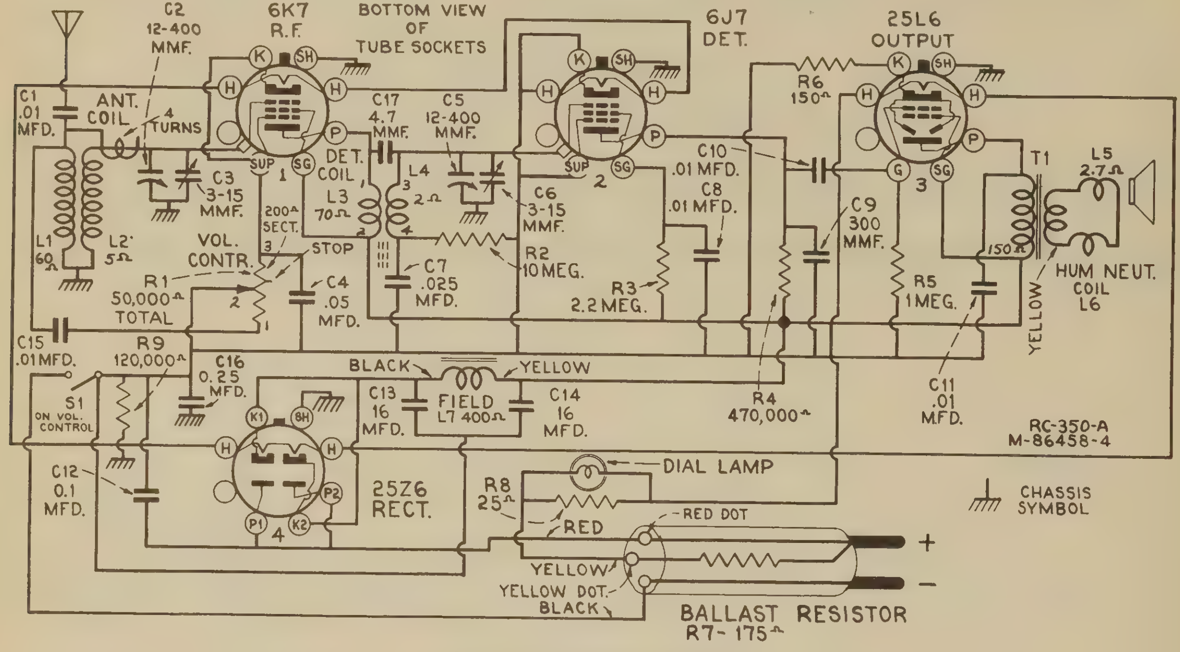
1. Dress green lead from antenna coil to gang up from speaker chassis.
2. Green lead from gang to grid of 6J7 must be dressed down and away from top of bracket, and centered in gang section.
3. Green lead from detector coil to gang must be dressed under pilot lamp bracket: Any excess wire should be pulled through to under side of chassis.
4. Pilot lamp leads must be dressed clear of gang rotor.
5. Magnetite core in detector coil must not be in contact with base or mounting screw.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

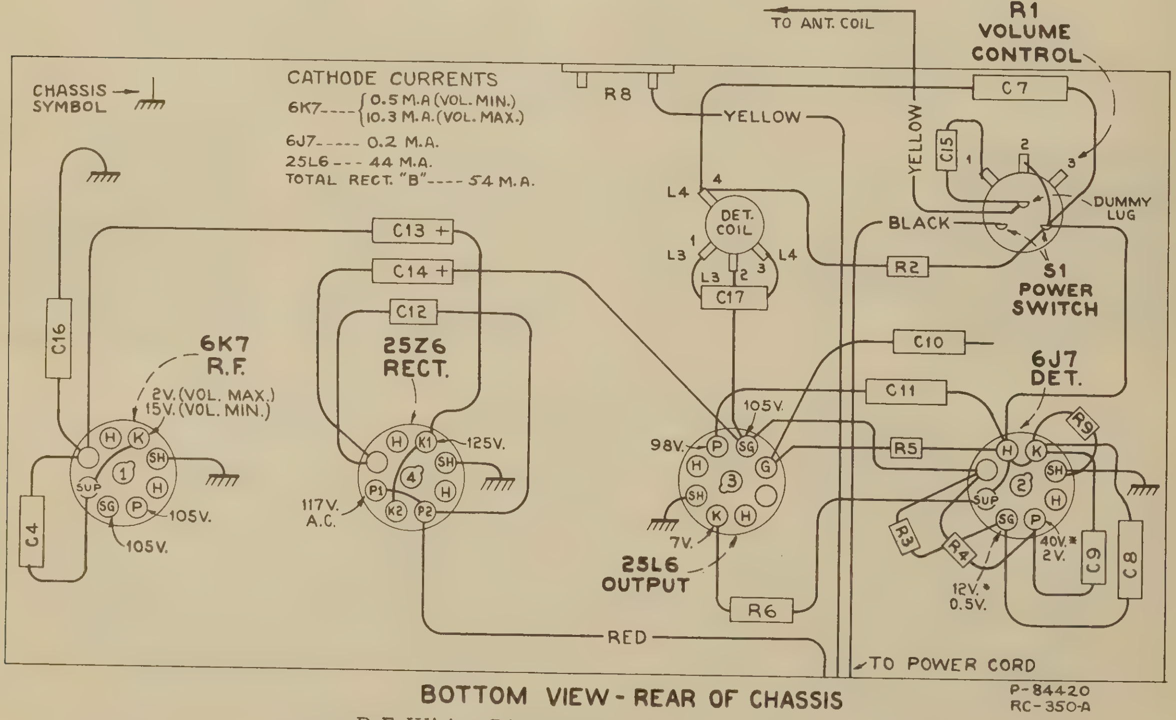
Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.



Schematic Circuit Diagram



R-F Wiring Diagram and Socket Voltages

* Note: Values with (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to common negative line, unless otherwise specified.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

RCA Victor

MODEL 94X

Four-Tube, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 5—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	530-1,800 kc
Alignment Frequency	1,800 kc (ant., det.)

Radiotron Complement

(1) RCA-6K7	R-F Amp.
(2) RCA-6J7	Detector
(3) RCA-25L6-G	Output
(4) RCA-25Z6-G	Rectifier

Power Supply Ratings

A-C Rating	105-125 volts, 50-100 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

Power Output (125-volt, 60-cycle supply)

Undistorted	1.0 watt
Maximum	1.5 watts

Loudspeaker

Type	5-inch Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions	8-5/16 in.	8⅛ inches	5½ inches
Chassis Base	2-7/16 in.	6¼ inches	4-9/16 in.

Over-all Chassis Height	6⅝ inches
Weight	5¾ lbs. (Net), 7¼ lbs. (Shipping)
Operating Controls	(1) Power Switch—Volume; (2) Tuning

Alignment Procedure

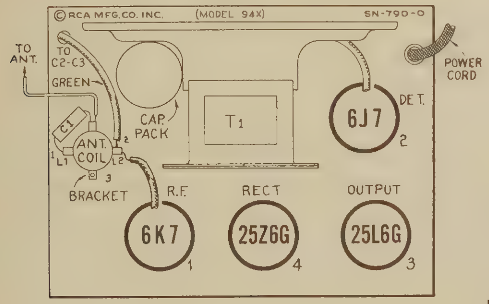
Remove dial pointer by pulling it carefully off the pointer shaft. Remove chassis from cabinet.

CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,800 kc, connect an output meter across the voice coil, and turn volume control to maximum.

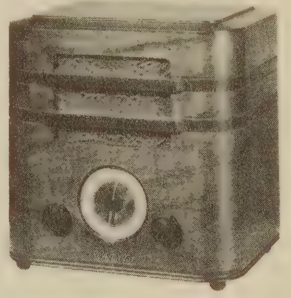
Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Assemble chassis in cabinet and press the pointer on the shaft. Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.



Left—Figure 1
Radiotron Locations

Right—Model 94X



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
11350	Cap—Grid contact cap	
30883	Capacitor—300 Mmfd. (C9)	
14393	Capacitor—.01 Mfd. (C1, C8, C10)	
30938	Capacitor—.025 Mfd. (C11)	
30882	Capacitor—.05 Mfd. (C12)	
30899	Capacitor—0.1 Mfd. (C4)	
30965	Capacitor—0.25 Mfd. (C7)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—R.F. coil (L3, L4)	
30871	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	
30877	Cord—Indicator drive cord	
30878	Cord—Resistance power cord complete with plug —190 ohms (R7)	
13199	Lead—Antenna lead—approx. 15 ft. long	
30880	Resistor—150 ohms, ½ watt (R6)	
13045	Resistor—18,000 ohms, ¼ watt (R2)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 Meg., ¼ watt (R5)	
11626	Resistor—2.2 Meg., ¼ watt (R3)	
30879	Shaft—Indicator drive shaft	
11196	Socket—Radiotron socket	
30631	Spring—Indicator drive cord tension spring	
30874	Volume Control and power switch (R1, S1)	
	REPRODUCER ASSEMBLIES (Speaker 84202-1)	
30943	Cone—Reproducer cone and voice coil (L5)	
30942	Reproducer complete	
30944	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
30887	Dial—Station selector dial scale	
30884	Indicator—Station selector indicator pointer	
30885	Knob—Station selector or volume control knob	
30886	Screw—Chassis mounting screw and washer	
12993	Screw—Set screw for knob Stock No. 30885	

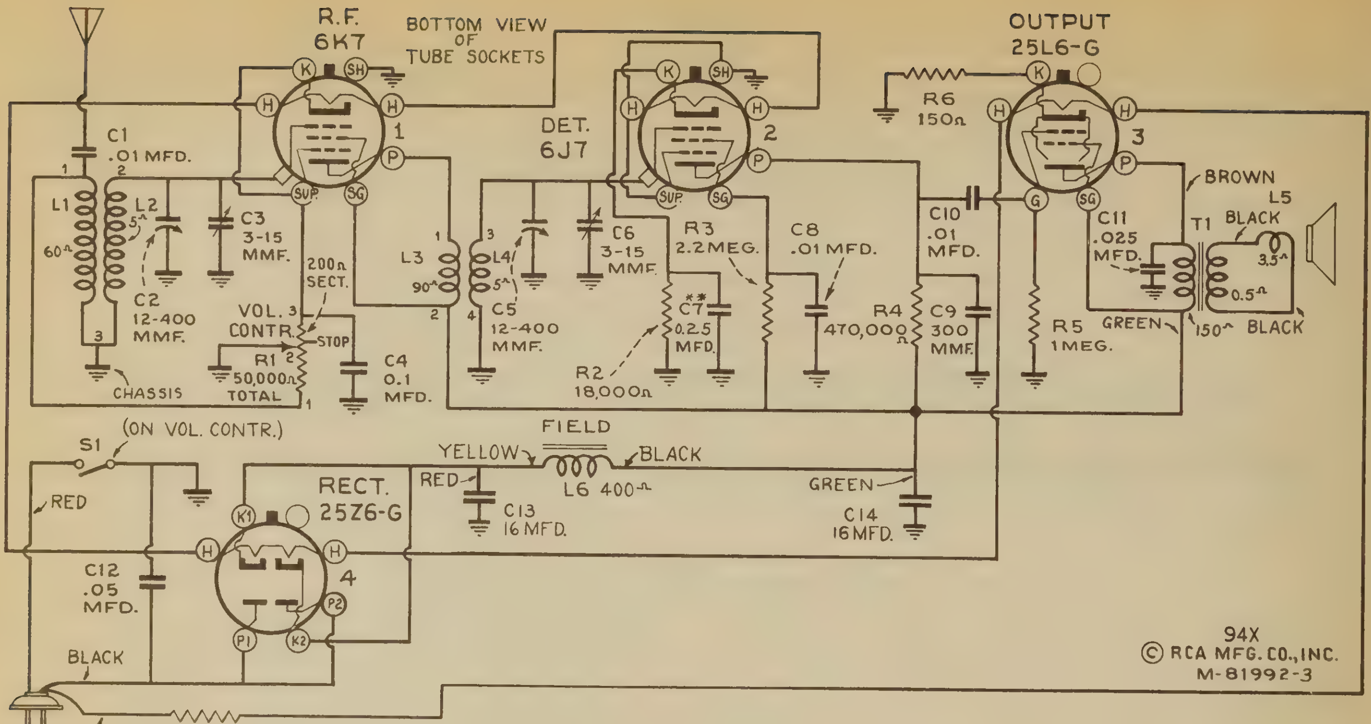


Figure 2—Schematic Circuit Diagram

** Some sets have a three-section capacitor pack (C7, C13, C14). In other sets, the pack contains only two capacitors (C13, C14); a separate 0.25 mfd. capacitor being used as C7. The pack furnished for replacement (No. 30873) is a two-section pack and does not include C7. Therefore, when an original three-section pack is replaced by No. 30873, it is necessary to connect a No. 30965 200-volt 0.25 mfd. capacitor from the cathode of the 6J7 to terminal 2 (chassis) on the volume control. This capacitor should be dressed close to the front of chassis.

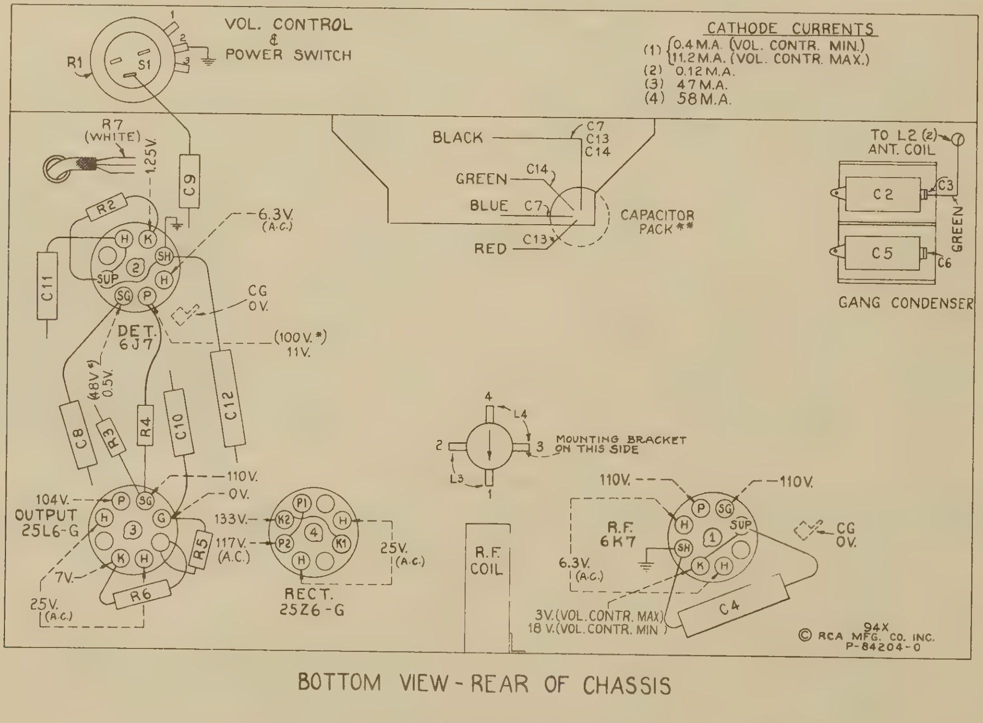


Figure 3—Radiotron Socket Voltages, and Location of Parts

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

*** Note:** Values with (*) are operating voltages. Values not starred are actual measured voltages.

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RCA Victor

MODELS 94X1 and 94X2

Four-Tube, Electric-Tuning, Single-Band, AC-DC, T-R-F Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 6—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGE
Two stations between 540-900 kc
Two stations between 680-1,200 kc
Two stations between 850-1,500 kc

RADIOTRON COMPLEMENT

(1) RCA-6K7	R-F Amplifier
(2) RCA-6J7	Detector
(3) RCA-25L6-G	Output
(4) RCA-25Z6-G	Rectifier

POWER SUPPLY RATINGS

A-C Rating	105-125 volts, 50-100 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted	1.0 watt
Maximum	1.5 watts

LOUDSPEAKER

Type	5-inch Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (94X1)	8⅛ inches	8⅛ inches	5⅝ inches
Cabinet Dimensions (94X2)	8⅛ inches	8¼ inches	5⅞ inches
Chassis Base	2⅜ inches	6¼ inches	4-9/16 in.
Over-all Chassis Height			8 inches
Weight	6 lbs. (Net), 7¼ lbs. (Shipping)		
Operating Controls	(1) Power Switch—Volume (2) Six Station Buttons		

Service Data

Removing chassis from cabinet.—Remove back plate and volume-control knob. Pull the push-button knobs off their shafts. Remove the 25L6-G output tube. Remove the four chassis screws (bottom of cabinet). Lift the chassis and slide it out at an angle to clear the shaft holes in the top of cabinet.

Removing trimmer-and-switch assembly.—For convenient access to the sockets and parts, it is advisable to remove the trimmer-and-switch assembly. This is a simple operation, accomplished as follows: Remove the two brackets from bottom of chassis, unsolder the three leads that connect to the assembly, remove the two nuts that hold the assembly to the chassis, and lift out the assembly.

In re-assembling, dress the leads to prevent rubbing against the push-button shafts.

CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Adjustment of Tuning Capacitors

The preferable and quickest method of adjusting the tuning capacitors for six different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Determine the correct settings of the test-oscillator for these six frequencies. This is accomplished as follows: Tune in each of the six stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.
3. Reel up the antenna wire. Connect the high side of test-oscillator through a 60 mmfd. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1 mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.
4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screwdriver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. (Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)
5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.
6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.
7. Final adjustment may be made in actual reception of the stations.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES		13045	Resistor—18,000 ohms, ¼ watt (R2)	
			12285	Resistor—470,000 ohms, ¼ watt (R4)	
30314	Cap—Grid contact cap		13730	Resistor—1 Meg., ¼ watt (R5)	
30977	Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24, C25)		11626	Resistor—2.2 Meg., ¼ watt (R3)	
30978	Capacitor—Det. tuning capacitor bank (C26, C27, C28, C29, C30, C31)		30976	Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31)	
30883	Capacitor—300 Mmfd. (C9)		30979	Transformer—Output Transformer (T1)	
14393	Capacitor—.01 Mfd. (C1, C8, C10)		30874	Volume control and power switch (R1, S1)	
30882	Capacitor—.05 Mfd. (C12)				
30938	Capacitor—.025 Mfd. (C11)			REPRODUCER ASSEMBLIES (Speaker 84243-1)	
30899	Capacitor—0.1 Mfd. (C4)				
30965	Capacitor—0.25 Mfd. (C7)		30943	Cone—Reproducer cone and voice coil (L5)	
			30980	Reproducer complete	
30875	Coil—Antenna coil (L1, L2)				
30876	Coil—R.F. coil (L3, L4)			MISCELLANEOUS ASSEMBLIES	
30878	Cord—Resistance power cord complete with plug —190 ohms (R7)		30981	Button—Station selector switch push button	
			30885	Knob—Volume control knob	
13199	Lead—Antenna lead—approx. 15 ft. long		30991	Marker—Station call letter markers	
11196	Socket—Radiotron socket		30886	Screw—Chassis mounting screw and washer	
30880	Resistor—150 ohms, ½ watt (R6)		12993	Screw—Set screw for knob Stock No. 30885	

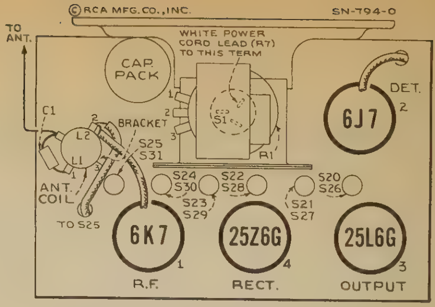


Figure 1—Radiotron Location

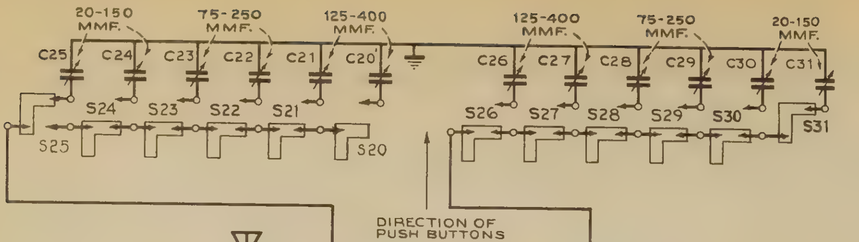
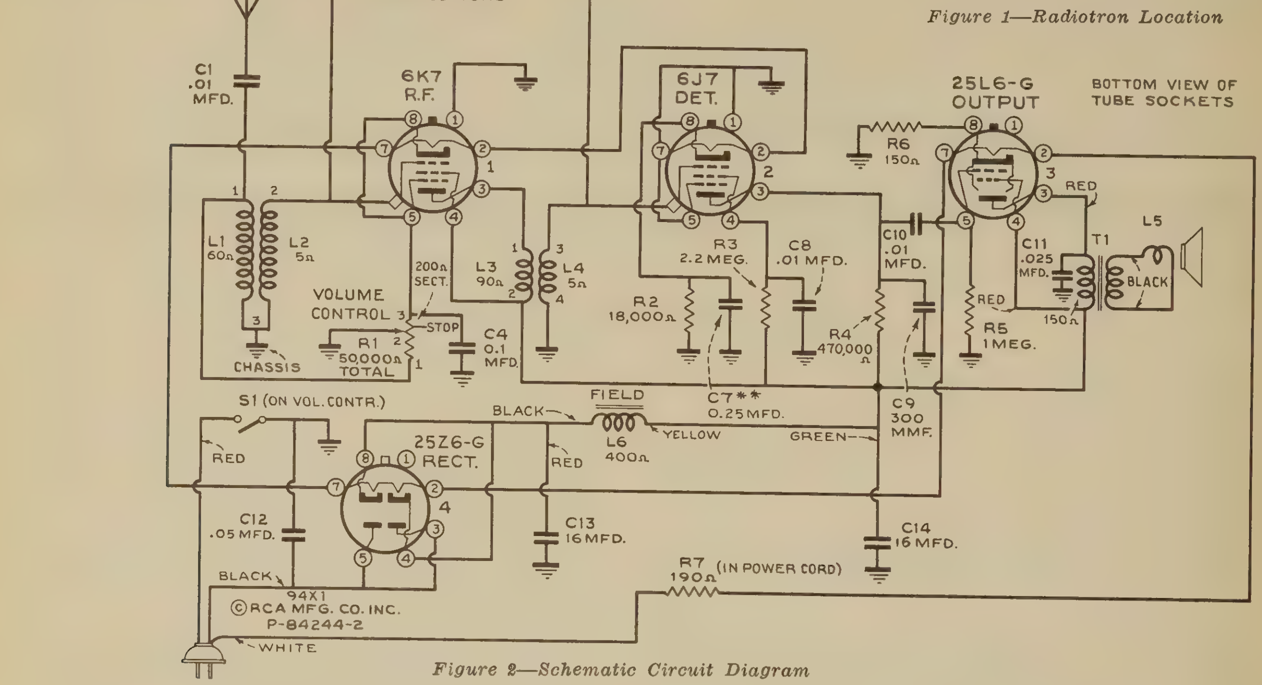
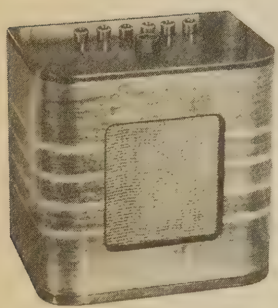



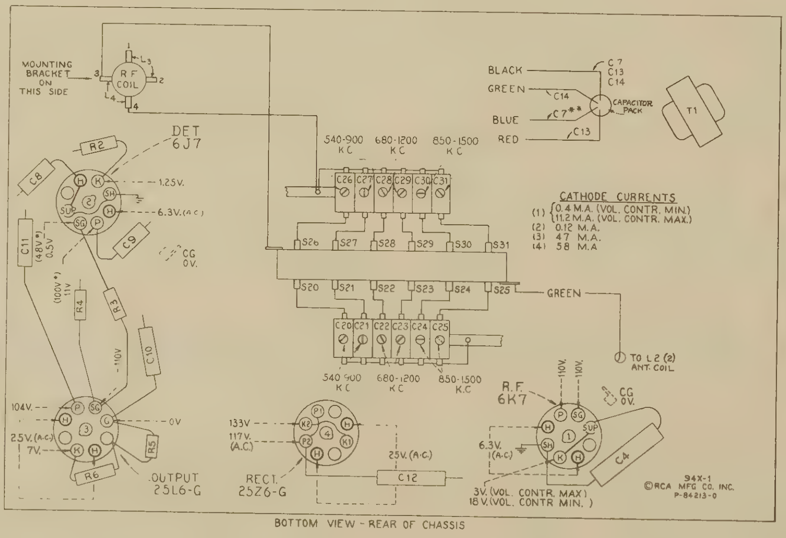
Figure 2—Schematic Circuit Diagram

(L5 is 3.5 ohms, and the sec. of T1 is 0.5 ohms)

** Some sets have a three-section capacitor pack (C7, C13, C14). In other sets, the pack contains only two capacitors (C13, C14); a separate 0.25 mfd. capacitor being used as C7. The pack furnished for replacement (No. 30873) is a two-section pack and does not include C7. Therefore, when an original three-section pack is replaced by No. 30873, it is necessary to connect a No. 30965 200-volt 0.25 mfd. capacitor from the cathode of the 6J7 to the ground lug at the output transformer. This capacitor should be dressed close to the front of chassis.



Model 94X1



Model 94X2

Figure 3—Radiotron Socket Voltages, and Location of Parts

Measurements made to chassis unless otherwise indicated.

Measurements made with all station buttons out, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

For convenience in making measurements at the socket contacts, it is advisable to remove the trimmer-and-switch assembly, and make a temporary connection from the chassis to the bottom lug on L4. (This connection is required in order to complete the detector grid circuit.)

*Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

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RCA Victor

MODELS 95X and 95XL

Five-Tube, Single-Band, AC-DC, T-R-F Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 14—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	540-1,760 kc
Alignment Frequency	1,760 kc (ant., det.)

Radiotron Complement

(1) RCA-6K7	R-F Amp.
(2) RCA-6J7	Detector
(3) RCA-25L6	Output
(4) RCA-25Z6-G	Rectifier
(5) RCA-BK55B	Ballast Tube
Dial Lamp	Mazda No. 40, 6.3 volts, .15 amps.

Power Supply Ratings

A-C Rating	105-125 volts, 50-60 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

Power Output (125-volt, 60-cycle supply)

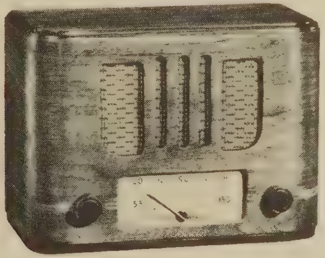
Undistorted	1.0 watt
Maximum	1.5 watts

Loudspeaker

Type	5-inch Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

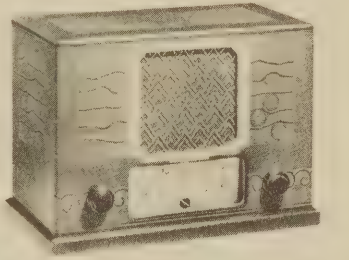
	Height	Width	Depth
Cabinet Dimensions (95X)	7½ in.	10⅛ in.	5-9/16 in.
Cabinet Dimensions (95XL)	7½ in.	10⅛ in.	5-7/16 in.
Chassis Base	2½ in.	9 in.	4⅜ in.

Over-all Chassis Height	6⅛ inches
Weight	5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls	(1) Power Switch—Volume; (2) Tuning



Left—Model 95X

Right—Model 95XL



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31198	Ballast—Ballast resistor tube type BK55B (R7, R8)	
30883	Capacitor—300 mmf. (C9)	
14393	Capacitor—.01 mfd. (C1, C8, C10)	
5196	Capacitor—.035 mfd. (C11)	
30882	Capacitor—.05 mfd. (C15)	
30899	Capacitor—0.1 mfd. (C4)	
30965	Capacitor—0.25 mfd. (C7)	
12484	Capacitor—0.25 mfd. (C12)	
30873	Capacitor—Comprising two 16 mfd. sections (C13, C14)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—Det. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser—Model 95X only (C2, C3, C5, C6)	
31191	Condenser—2-gang variable tuning condenser—Model 95XL only (C2, C3, C5, C6)	
30877	Cord—Indicator drive cord	
31200	Dial—Station selector dial scale and plate assembly	
31196	Indicator—Station selector indicator pointer	
4340	Lamp—Dial lamp	
31193	Lead—Antenna lead—approximately 25 ft. long	
31198	Resistor—Ballast resistor tube type BK55B (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13045	Resistor—18,000 ohms, ¼ watt (R2)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 meg., ¼ watt (R5, R9)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
31197	Shaft—Indicator pointer shaft and pulley	
31199	Shield—Dial lamp shield	
14171	Socket—Dial lamp socket	
11196	Socket—Radiotron and ballast resistor socket	
30631	Spring—Indicator drive cord tension spring	
31198	Tube—Ballast resistor tube type BK55B (R7, R8)	
31194	Volume control and power switch—Model 95X only (R1, S1)	
31192	Volume control and power switch—Model 95XL only (R1, S1)	
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone and voice coil (L5)	
31201	Speaker—Complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31205	Crystal—Station selector dial crystal	
30885	Knob—Tuning or volume control knob—Model 95X only	
31204	Knob—Tuning or volume control knob—Model 95XL only	
12993	Screw—Set screw for knob Stock No. 30885—Model 95X only	
31079	Screw—Chassis mounting screws and washers	
30900	Spring—Retaining spring for knob Stock No. 31204—Model 95XL only	

First Edition

Printed in U. S. A.

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Alignment Procedure

CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

Precautionary Lead Dress

1. Dress power cord away from detector coil, heater leads close to base, leads from electrolytic close to base and free of grid leads.
2. Dress lead from det. coil to gang condenser toward back apron. Dress lead from antenna coil to volume control toward front apron.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) from the cathode of the rectifier tube to chassis. (Positive to contact K1 of 25Z6-G, and negative to shell contact of 6K7 r-f socket.)

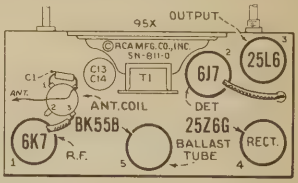


Figure 1—Radiotron Locations

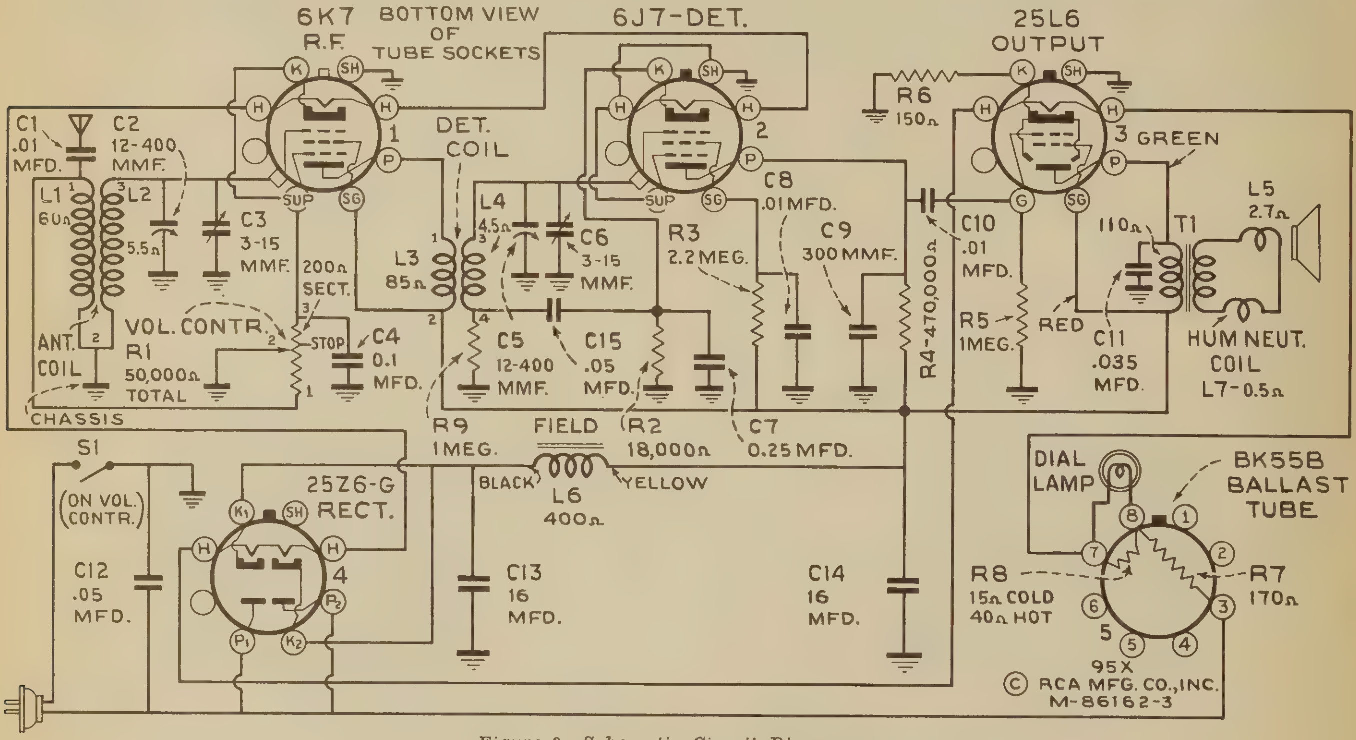


Figure 2—Schematic Circuit Diagram

The line by-pass, C12, is changed to .25 mfd. (Stock No. 12484) in some sets.

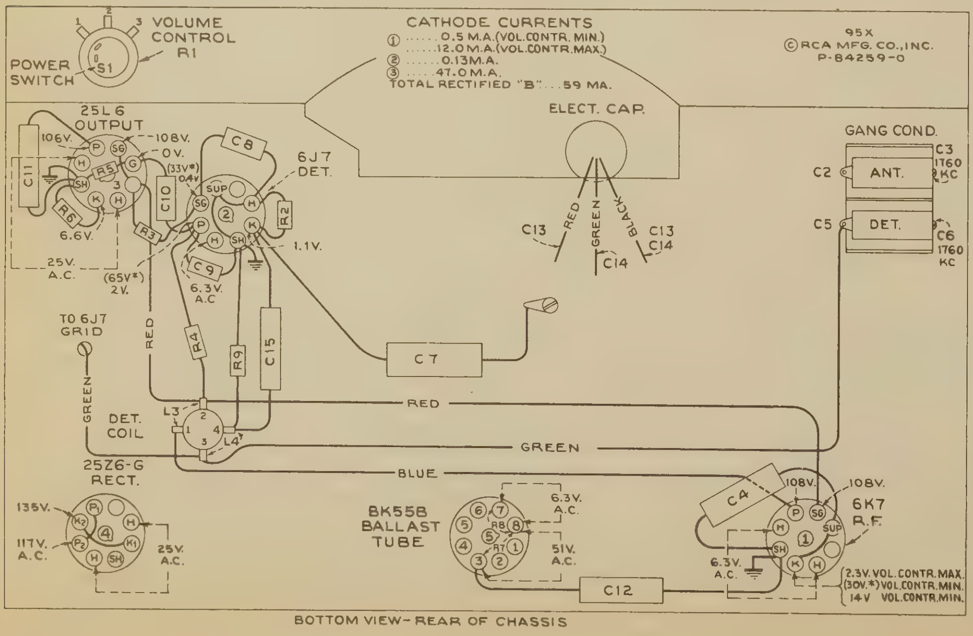


Figure 3—Radiotron Socket Voltages, and Location of Parts

* Note: Values with (*) are operating voltages.

Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

RCA Victor

MODEL 95XLW

Chassis No. RC-345F

Five-Tube, Two-Band, AC-DC, T-R-F Receiver

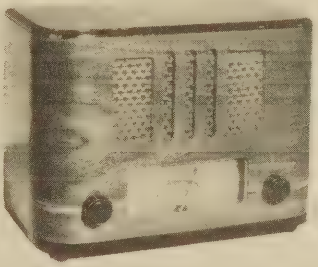
TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Ranges

Long Wave (X)	150-360 kc
Standard Broadcast (A)	530-1,500 kc



Tube Complement

(1) RCA-6K7	R-F Amp.
(2) RCA-6J7	Detector
(3) RCA-25L6	Output
(4) RCA-25Z6-G	Rectifier
(5) RCA-BK55B	Ballast Tube

Dial Lamp. Mazda No. 40, 6.3 volts, .15 amps.

Loudspeaker

Type	5-inch electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

Power Output
(125 volt, 60 cycle supply)

Undistorted	1.0 watt
Maximum	1.5 watts

Power Supply Ratings

A-C Rating	105-125 volts, 25-60 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

	Height	Width	Depth
Cabinet Dimensions	7½ in.	10⅛ in.	5⅝ in.
Chassis Base	2¾ in.	9 in.	4⅞ in.
Over-all Chassis Height			6¼ in.

Weight: 5¾ lbs. (Net), 7½ lbs. (Shipping)

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone (L5)	
31201	Speaker—Speaker complete	
31203	Transformer—Output transformer (T1)	
	CHASSIS ASSEMBLIES (RC-345F)	
31198	Ballast—Ballast resistor tube (R7, R8)	
4287	Body—Connector body for dial lamp connector	
13002	Capacitor—12 mmfd. (C16, C18)	
13003	Capacitor—180 mmfd. (C17)	
30883	Capacitor—300 mmfd. (C9)	
14393	Capacitor—.01 mfd., 300 V. (C1, C8, C10)	
5196	Capacitor—.035 mfd. (C11)	
30899	Capacitor—.01 mfd., 200 V. (C4)	
30882	Capacitor—.05 mfd. 200 V. (C15)	
12484	Capacitor—.25 mfd., 400 V. (C12)	
30965	Capacitor—0.25 mfd., 350 V. (C7)	
31323	Capacitor—16 mfd., 150 V. (C14)	
31584	Capacitor—40 mfd., 150 V. (C13)	
32213	Coil—Antenna coil (L1, L2, C19)	
32214	Coil—R.F. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	
14086	Cord—Power cord	
32634	Cord—Variable condenser drive cord	
32211	Dial—Station selector dial scale and plate assembly	
4286	Ferrule—Ferrule for dial lamp connector	
4340	Lamp—Pilot lamp	
31193	Lead—Antenna lead	
31196	Pointer—Station selector indicator pointer	
31198	Resistor—Ballast resistor tube (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13045	Resistor—18,000 ohms, ¼ watt (R2)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 megohm, ¼ watt (R5, R9)	
12679	Resistor—2.2 megohms, ¼ watt (R3)	
31197	Shaft—Indicator pointer shaft and pulley	
31251	Socket—8-contact tube socket	
14171	Socket—Lamp socket assembly	
4284	Spring—Spring for dial lamp connector	
32210	Switch—Range switch (S2)	
31198	Tube—Ballast resistor tube (R7, R8)	
31194	Volume Control—Volume control and power switch (R1, S1)	
4285	Washer—Insulating washer for dial lamp connector	
	MISCELLANEOUS ASSEMBLIES	
31205	Crystal—Station selector dial crystal	
31204	Knob—Range switch knob	
30885	Knob—Station selector or volume control knob	
30870	Plug—2 contact male plug for motor leads	
31079	Screw—Chassis mounting screws and washers	
30900	Spring—Retaining spring for knob Stock No. 31204	

Alignment Procedure

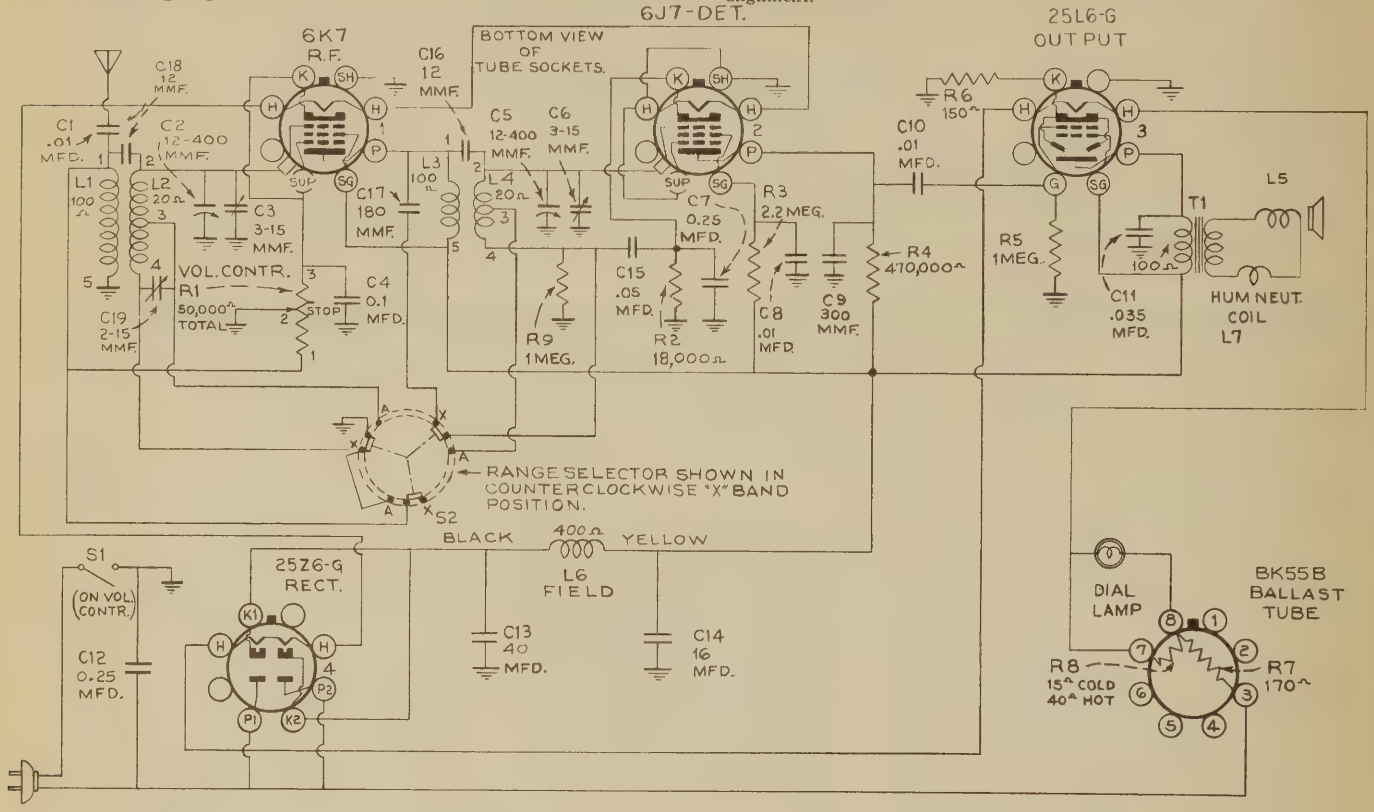
CAUTION: The chassis is connected to one side of the power line. Avoid contact of chassis or parts to external ground when servicing.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low frequency end when the gang condenser is at maximum.

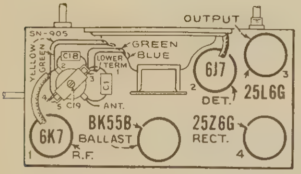
Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 capacitor. Keep antenna roll and lead clear of chassis during alignment.

To align "A" band, turn range switch to "A" band (clockwise) position, turn receiver dial to 1,500 kc, tune test-oscillator to 1,500 kc, connect an output meter across the voice coil, and turn volume control to maximum. Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

To align "X" band, turn range switch to "X" band (counter-clockwise) position, tune test-oscillator to 360 kc, and adjust C19 for maximum output. The gang should be rocked during "X" band alignment.



Schematic Circuit Diagram



Tube and Trimmer Locations

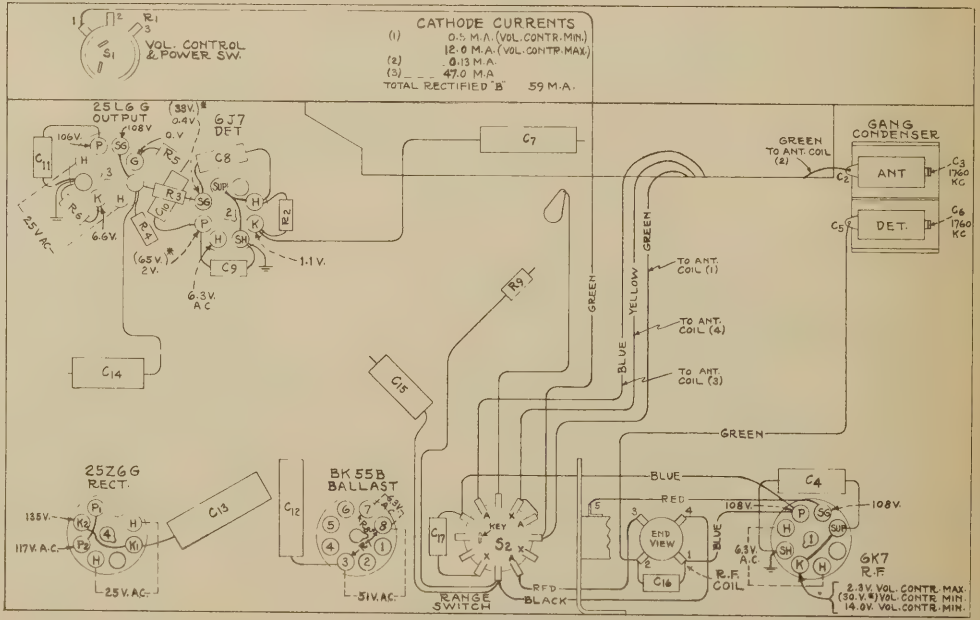
* **Note:** Values with (*) are operating voltages.

Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.



BOTTOM VIEW- REAR OF CHASSIS

Precautionary Lead Dress

1. Dress power cord away from yellow lead to volume control.
2. Dress all leads away from antenna coil.
3. Green lead from gang to detector coil must be dressed under switch shaft and over detector coil (looking from bottom of chassis).
4. Yellow lead from volume control to 6K7 cathode must be dressed down against rear apron of chassis.
5. Green lead from switch to volume control must be dressed away from all other wires.
6. All leads to detector coil, except green lead in No. 3 (above) must be dressed down against the chassis base.

RCA Victor

MODEL 95X1

Five-Tube, Electric-Tuning, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 15—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGE .... 540-1,560 kc
Alignment Frequency .... 1,560 kc (ant., det.)

One station between approximately 540-860 kc
Two stations between approximately 680-1,200 kc
Two stations between approximately 850-1,500 kc

RADIOTRON COMPLEMENT

(1) RCA-6K7 .... R-F Amplifier
(2) RCA-6J7 .... Detector
(3) RCA-25L6 .... Output
(4) RCA-25Z6-G .... Rectifier
(5) RCA-BK-55-B .... Ballast Tube

Dial Lamp .... Mazda 46, 6.3 volts, .15 ampere

POWER SUPPLY RATINGS

A-C Rating .... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating .... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted .... 1.0 watt
Maximum .... 1.5 watts

LOUDSPEAKER

Type .... 5-inch Electrodynamic
Voice-Coil Impedance .... 3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (95X1)	7½ inches	10⅛ inches	5-9/16 inches
Chassis Base	2½ inches	9 inches	4⅜ inches
Over-all Chassis Height			6¼ inches

Weight .... 5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls ...... (1) Power Switch—Volume, (2) Tuning, (3) Five Station Buttons, One Manual-Tuning Button

Service Data

Removing chassis from cabinet.—Remove back plate and control knobs. Pull the push-button knobs off their shafts. Remove the four chassis screws (bottom of cabinet). Lift the chassis and slide it out at an angle to clear the shaft holes in the top of cabinet.

Removing trimmer-and-switch assembly.—For convenient access to the sockets and parts, it is advisable to remove the trimmer-and-switch assembly. This is a simple operation, accomplished as follows: Unsolder the four leads that connect to the assembly, remove the two nuts that hold the assembly to the chassis, and lift out the assembly. In re-assembling, dress the leads to prevent rubbing against the push-button shafts.

CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31198	Ballast—Ballast resistor-tube type BK55B (R7, R8)	
31208	Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24)	
31209	Capacitor—Detector tuning capacitor bank (C26, C27, C28, C29, C30)	
30883	Capacitor—300 mmf. (C9)	
14393	Capacitor—.01 mfd. (C1, C8, C10)	
5196	Capacitor—.035 mfd. (C11)	
30882	Capacitor—.05 mfd. (C15)	
30899	Capacitor—0.1 mfd. (C4)	
30965	Capacitor—0.25 mfd. (C7)	
12484	Capacitor—0.25 mfd. (C12)	
30873	Capacitor—Comprising two 16 mfd. sections (C13, C14)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—Det. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	
30877	Cord—Indicator drive cord	
31206	Dial—Station selector dial and dial plate assembly	
31196	Indicator—Station selector indicator pointer	
4340	Lamp—Dial lamp	
31193	Lead—Antenna lead—approximately 25 ft. long	
31198	Resistor—Ballast resistor tube type BK55B (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13045	Resistor—18,000 ohms, ¼ watt (R2)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 meg., ¼ watt (R5, R9)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
31197	Shaft—Indicator pointer shaft and pulley	
31199	Shield—Dial lamp shield	
14171	Socket—Dial lamp socket	
11196	Socket—Radiotron and ballast resistor socket	
30631	Spring—Indicator drive cord tension spring	
31207	Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31)	
31198	Tube—Ballast resistor tube type BK55B (R7, R8)	
31194	Volume control and power switch (R1, S1)	
	SPEAKER ASSEMBLIES (Speaker 84202-3)	
31202	Cone—Speaker cone and voice coil (L5)	
31201	Speaker—Complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31210	Button—Station selector push button	
31205	Crystal—Station selector dial crystal	
31095	Disc—10 celluloid protector discs for call letter markers	
30885	Knob—Tuning or volume control knob	
30991	Markers—Station selector button call letter markers	
12993	Screw—Set screw for knob Stock No. 30885	
31079	Screw—Chassis mounting screws and washers	

First Edition

Printed in U. S. A.

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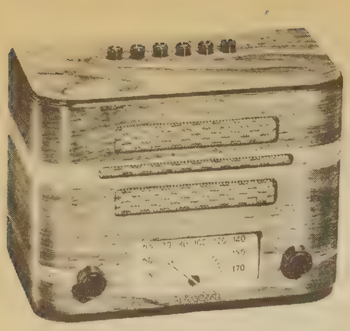


Alignment Procedure

Remove chassis from cabinet.

Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through an .01-mfd. capacitor. Turn gang condenser to minimum (full out), push in the manual-tuning (right-hand) button, tune oscillator to 1,560 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during all adjustments.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, so that it is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

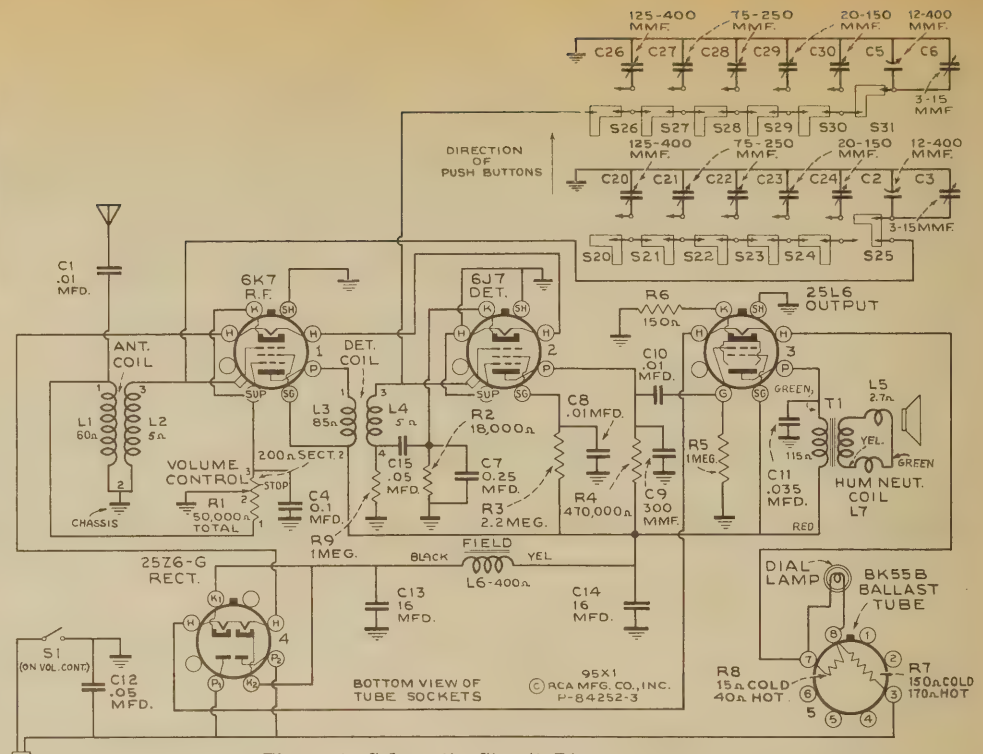


Figure 1—Schematic Circuit Diagram

The line by-pass, C12, is changed to .25 mfd. (Stock No. 12484) in some sets.

Adjustment of Tuning Capacitors

The preferable and quickest method of adjusting the tuning capacitors for five different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired five stations, arranged in order from low to high frequencies.
2. Determine the correct settings of the test-oscillator for these five frequencies. This is accomplished as follows: Tune in each of the five stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.
3. Reel up the antenna wire. Connect the high side of test-oscillator through an 80-mmfd. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1-mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.
4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screwdriver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. **(Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)**
5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.
6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.
7. Final adjustment may be made in actual reception of the stations.

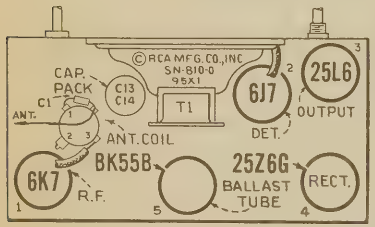


Figure 2—Radiotron Location

*Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with manual-tuning button (right-hand) pushed in, and set tuned to a quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

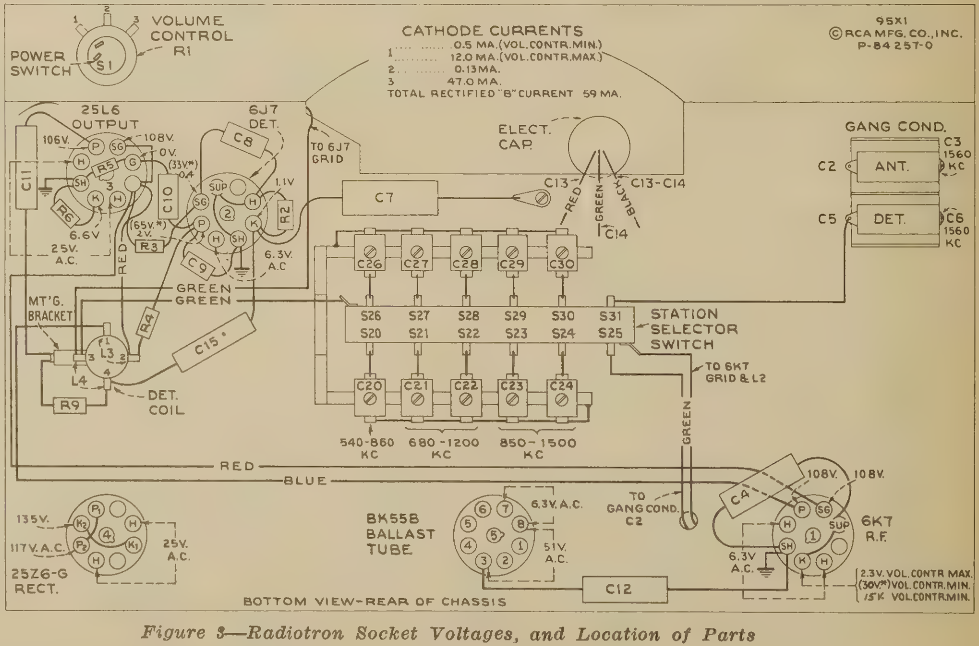


Figure 3—Radiotron Socket Voltages, and Location of Parts

Precautionary Lead Dress

1. Dress Power cord away from detector coil, heater leads close to base, leads from electrolytic close to base and free of grid leads.
2. Dress blue lead from r-f plate to detector coil along front edge of push-button shaft holes. Dress all leads to prevent rubbing against push button shafts.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) from the cathode of the rectifier tube to chassis. (Positive to contact K1 of 25Z6-G, and negative to shell contact of 6K7 r-f socket.)

RCA

RCA Victor

MODEL 95X6

Chassis No. RC-381A

Five-Tube, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 14A—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range	540-1,760 kc
Alignment Frequency	1,760 kc (ant., det.)

RCA TUBE COMPLEMENT

(1) RCA-6K7	R-F Amp.
(2) RCA-6J7	Detector
(3) RCA-25L6	Output
(4) RCA-25Z6-G	Rectifier
(5) RCA-BK55B	Ballast Tube
Dial Lamp	Mazda No. 40, 6.3 volts, .15 amps.

POWER SUPPLY RATINGS

A-C Rating	105-125 volts, 50-60 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

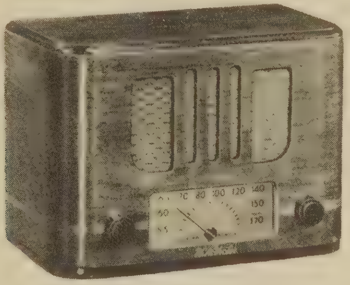
Undistorted	1.0 watt
Maximum	1.5 watts

LOUDSPEAKER

Type	5-inch Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (95X)	7½ in.	10⅛ in.	5-9/16 in.
Cabinet Dimensions (95XL)	7½ in.	10⅛ in.	5-7/16 in.
Chassis Base	2½ in.	9 in.	4⅜ in.

Over-all Chassis Height	6⅛ inches
Weight	5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls	(1) Power Switch—Volume; (2) Tuning



Precautionary Lead Dress

1. Dress power cord and line bypass C12 away from detector coil.
2. Plate lead from 6K7 to detector coil must be dressed close to chassis and run through center of chassis.
3. Green lead from detector coil to gang must be dressed toward back apron.
4. Green lead from antenna coil to volume control must be dressed against front apron.
5. Dress all heater leads close to base.
6. Yellow lead from cathode 6K7 to volume control must be dressed against chassis, under gang condenser and against front apron.
7. Dress C13 electrolytic close to base and free of grid leads.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31198	Ballast—Ballast resistor tube type BK55B (R7, R8)	
30883	Capacitor—300 mmf. (C9)	
14393	Capacitor—.01 mfd. (C1, C8, C10)	
4858	Capacitor—.01 mfd. (C17)	
30938	Capacitor—.025 mfd. (C15)	
5196	Capacitor—.035 mfd. (C11)	
30899	Capacitor—0.1 mfd. (C4)	
4839	Capacitor—0.1 mfd. (C12)	
12484	Capacitor—0.25 mfd. (C16)	
31323	Capacitor—16 mfd (C13, C14)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—Det. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser—(C2, C3, C5, C6)	
30877	Cord—Indicator drive cord	
31200	Dial—Station selector dial scale and plate assembly	
31196	Indicator—Station selector indicator pointer	
4340	Lamp—Dial lamp	
31193	Lead—Antenna lead—approximately 25 ft. long	
31198	Resistor—Ballast resistor tube type BK55B (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13734	Resistor—120,000 ohms, ¼ watt (R10)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 meg., ¼ watt (R5)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
13601	Resistor—10 meg., ¼ watt (R9)	
31197	Shaft—Indicator pointer shaft and pulley	
31199	Shield—Dial lamp shield	
14171	Socket—Dial lamp socket	
31251	Socket—Tube and ballast resistor socket	
30631	Spring—Indicator drive cord tension spring	
31198	Tube—Ballast resistor tube type BK55B (R7, R8)	
31966	Volume control and power switch (R1, S1)	
	SPEAKER ASSEMBLIES (84202-4)	
31202	Cone—Speaker cone and voice coil (L5)	
31201	Speaker—Complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31205	Crystal—Station selector dial crystal	
30863	Knob—Tuning or volume control knob	
31079	Screw—Chassis mounting screws and washers	
30900	Spring—Retaining spring for knob	

Alignment Procedure

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

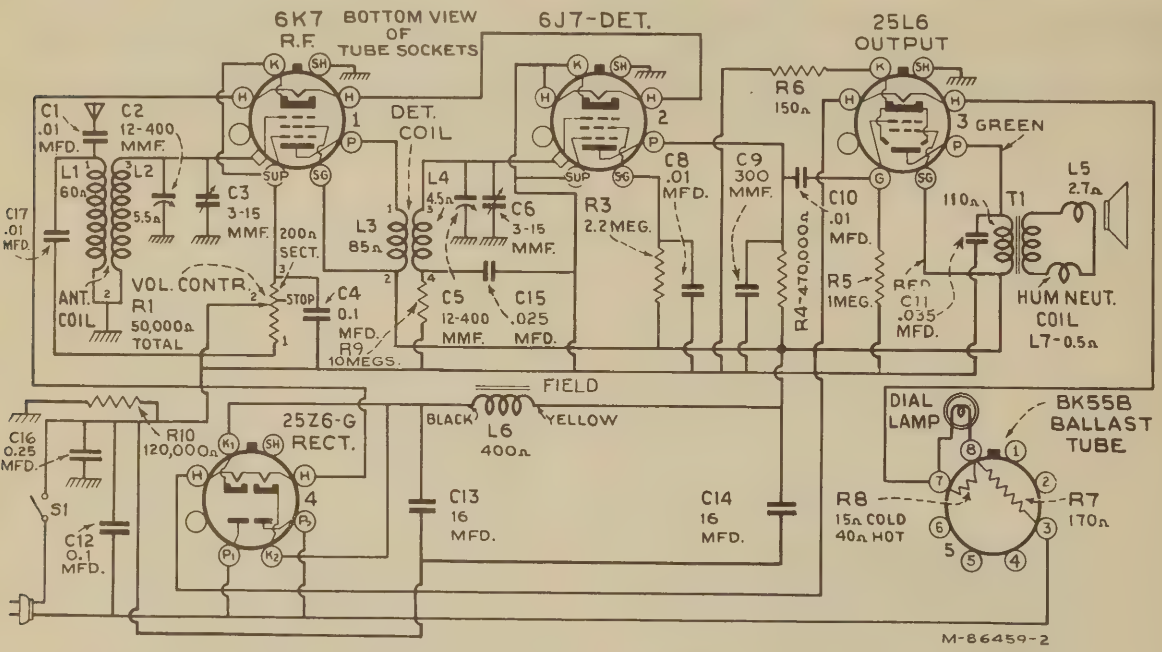
Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

25-Cycle Operation

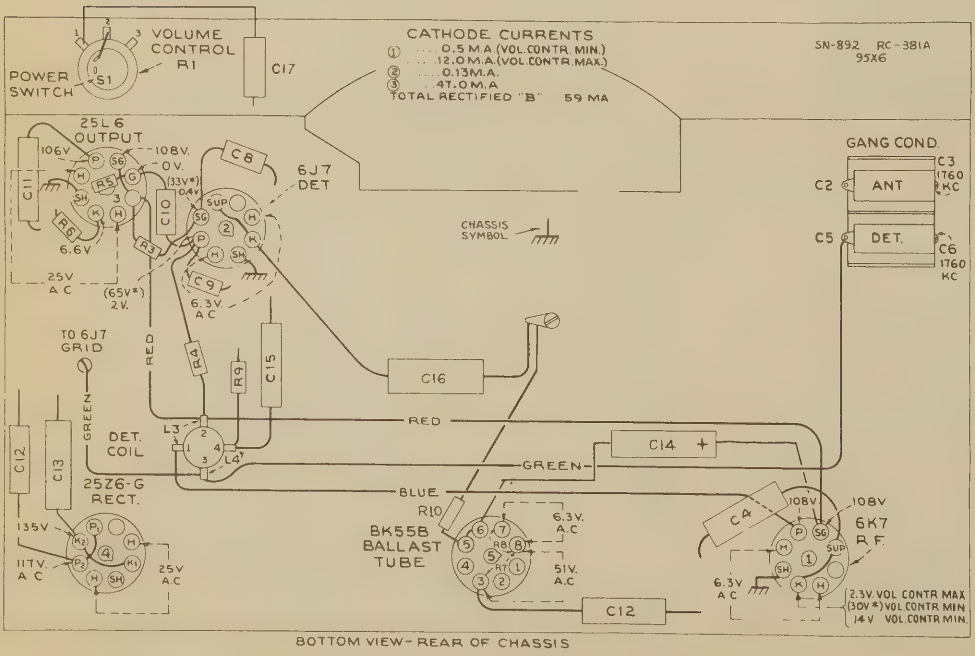
For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

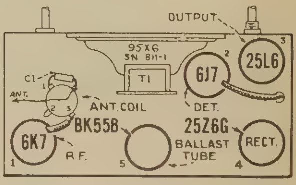


Schematic Circuit Diagram



R-F Wiring Diagram and Socket Voltages

Measurements made to common negative line, unless otherwise specified.



* Note: Values with (*) are operating voltages.

Values not starred are actual measured voltages.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

RCA Victor

MODEL 95X11

Chassis No. RC-381

Five-Tube, Electric-Tuning, Single-Band, AC-DC, T-R-F Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 15A—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

FREQUENCY RANGE	540-1,560 kc
Alignment Frequency	1,560 kc (ant., det.)

One station between approximately 540-900 kc
Two stations between approximately 680-1,080 kc
Two stations between approximately 850-1,500 kc

RCA TUBE COMPLEMENT

(1) RCA-6K7	R-F Amplifier
(2) RCA-6J7	Detector
(3) RCA-25L6	Output
(4) RCA-25Z6-G	Rectifier
(5) RCA-BK-55-B	Ballast Tube
Dial Lamp	Mazda 40, 6.3 volts, .15 ampere

POWER SUPPLY RATINGS

A-C Rating	105-125 volts, 50-60 cycles, 50 watts
D-C Rating	105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted	1.0 watt
Maximum	1.5 watts

LOUDSPEAKER

Type	5-inch Electrodynamic
Voice-Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions	7½ inches	10⅛ inches	5-9/16 inches
Chassis Base	2½ inches	9 inches	4⅜ inches
Over-all Chassis Height			6¼ inches

Weight	5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls	(1) Power Switch—Volume, (2) Tuning, (3) Five Station Buttons, One Manual-Tuning Button

Service Data

Removing chassis from cabinet.—Remove back plate and control knobs. Pull the push-button knobs off their shafts. Remove the four chassis screws (bottom of cabinet). Lift the chassis and slide it out at an angle to clear the shaft holes in the top of cabinet.

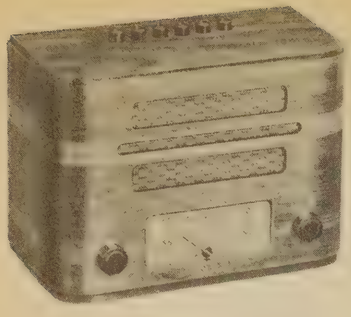
Removing trimmer-and-switch assembly.—For convenient access to the sockets and parts, it is advisable to remove the trimmer-and-switch assembly. This is a simple operation, accomplished as follows: Unsolder the four leads that connect to the assembly, remove the two nuts that hold the assembly to the chassis, and lift out the assembly. In re-assembling, dress the leads to prevent rubbing against the push-button shafts.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31198	Ballast—Ballast resistor-tube type BK55B (R7, R8)	
31208	Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24)	
31209	Capacitor—Detector tuning capacitor bank (C26, C27, C28, C29, C30)	
30883	Capacitor—300 mmf. (C9)	
14393	Capacitor—.01 mfd. (C1, C8, C10)	
4858	Capacitor—.01 mfd. (C32)	
30938	Capacitor—.025 mfd. (C15)	
5196	Capacitor—.035 mfd. (C11)	
30899	Capacitor—0.1 mfd. (C4)	
4839	Capacitor—0.1 mfd. (C12)	
12484	Capacitor—0.25 mfd. (C31)	
31323	Capacitor—16 mfd. (C13, C14)	
30875	Coil—Antenna coil (L1, L2)	
30876	Coil—Det. coil (L3, L4)	
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	
32634	Cord—Indicator drive cord	
31206	Dial—Station selector dial and dial plate assembly	
31196	Indicator—Station selector indicator pointer	
4340	Lamp—Dial lamp	
31193	Lead—Antenna lead—approximately 25 ft. long.	
31198	Resistor—Ballast resistor tube type BK55B (R7, R8)	
30880	Resistor—150 ohms, ½ watt (R6)	
13734	Resistor—120,000 ohms, ¼ watt (R10)	
12285	Resistor—470,000 ohms, ¼ watt (R4)	
13730	Resistor—1 meg., ¼ watt (R5)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
13601	Resistor—10 meg., ¼ watt (R9)	
31197	Shaft—Indicator pointer shaft and pulley	
31199	Shield—Dial lamp shield	
14171	Socket—Dial lamp socket	
31251	Socket—Tube and ballast resistor socket	
30631	Spring—Indicator drive cord tension spring	
31207	Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31)	
31198	Tube—Ballast resistor tube type BK55B (R7, R8)	
31966	Volume control and power switch (R1, S1)	
	SPEAKER ASSEMBLIES (Speaker 84202-4)	
31202	Cone—Speaker cone and voice coil (L5)	
31201	Speaker—Complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31210	Button—Station selector push button	
31205	Crystal—Station selector dial crystal	
31095	Disc—10 celluloid protector discs for call letter markers	
30863	Knob—Tuning or volume control knob	
30991	Markers—Station selector button call letter markers	
31079	Screw—Chassis mounting screws and washers	
30900	Spring—Retaining spring for knob	



Alignment Procedure

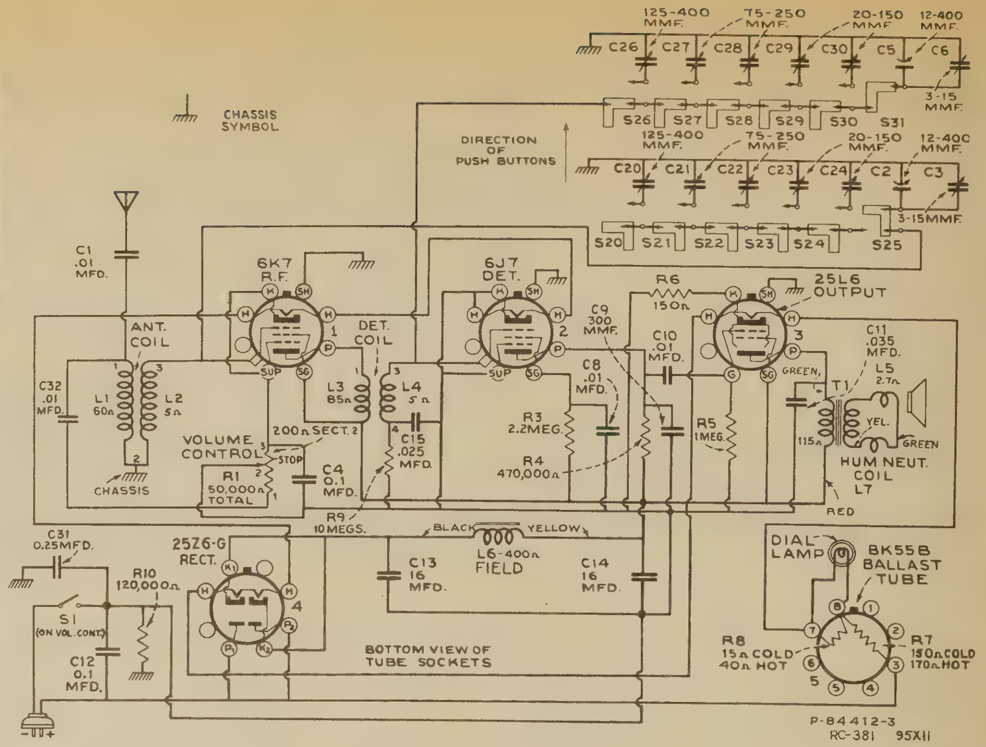
Remove chassis from cabinet.

Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through an .01-mfd. capacitor. Turn gang condenser to minimum (full out), push in the manual-tuning (right-hand) button, tune oscillator to 1,560 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during all adjustments.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, so that it is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

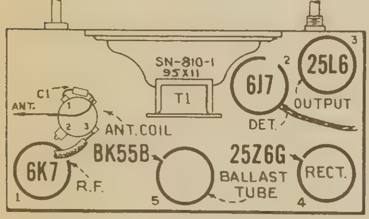


Schematic Circuit Diagram

Adjustment of Tuning Capacitors

The preferable and quickest method of adjusting the tuning capacitors for five different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired five stations, arranged in order from low to high frequencies.
2. Determine the correct settings of the test-oscillator for these five frequencies. This is accomplished as follows: Tune in each of the five stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.
3. Reel up the antenna wire. Connect the high side of test-oscillator through an 80-mmfd. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1-mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.
4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screwdriver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. **(Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)**
5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.
6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.
7. Final adjustment may be made in actual reception of the stations.



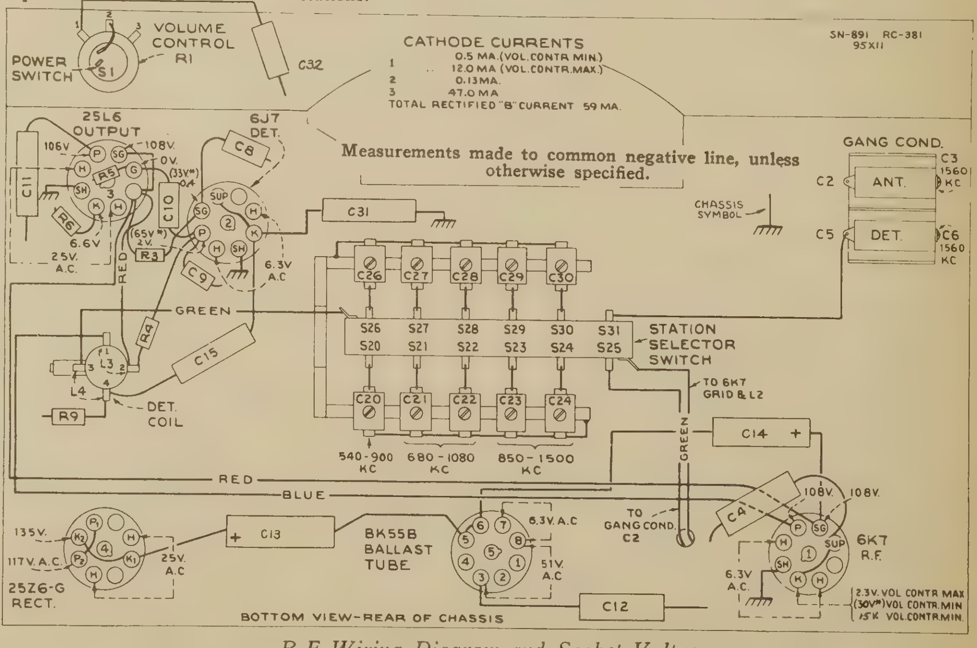
*Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements made with manual-tuning button (right-hand) pushed in, and set tuned to a quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

Precautionary Lead Dress

1. Dress Power cord away from detector coil, heater leads close to base, leads from electrolytic close to base and free of grid leads.
2. Dress blue lead from r-f plate to detector coil along front edge of push-button shaft holes. Dress all leads to prevent rubbing against push button shafts.



R-F Wiring Diagram and Socket Voltages

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

RCA Victor

MODEL 97X

Seven-Tube, Electric-Tuning, Single-Band, AC-DC Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 29—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical Specifications

Frequency Range	540-1,720 kc

One Station between approximately 550-980 kc (Button No. 1—left)
Two Stations between approximately 650-1,080 kc (Buttons 2 and 3)
Two Stations between approximately 850-1,500 kc (Buttons 4 and 5)

R-F Alignment Frequency	1,500 kc (osc., ant.)
Intermediate Frequency	455 kc

RCA TUBE COMPLEMENT

(1)	RCA-6A8-G	First Detector—Oscillator
(2)	RCA-6K7	I-F Amplifier
(3)	RCA-6H6	Second Det., and A.V.C.
(4)	RCA-6F5	Audio Voltage Amplifier
(5)	RCA-25L6-G	Power Output
(6)	RCA-25Z6-G	Half-Wave Rectifier
(7)	BK-42B	Ballast

POWER OUTPUT

Undistorted	1.0 watts
Maximum	1.5 watts

POWER SUPPLY RATING

A-C Rating	105-125 volts, 50-60 cycles, 55 watts
D-C Rating	105-125 volts, 55 watts

Pilot Lamp (1)	Mazda 47, 6.3 volts, .15 amp.

LOUDSPEAKER (ELECTRODYNAMIC)

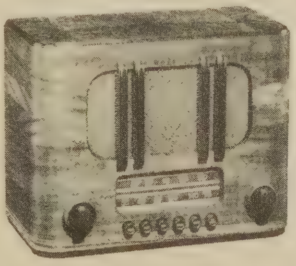
Diameter (inches)	5
V. C. Impedance at 400 cycles	3.0 ohms

Mechanical Specifications

Height (inches)	9⅜
Width (inches)	12
Depth (inches)	6½
Net Weight (pounds)	12
Shipping Weight (pounds)	15
Chassis-Base Dimensions	11⅛ inches wide, 5 inches deep, 2⅞ inches high
Over-all Height	8 inches
Tuning Drive Ratio	6 to 1

General Description

Model 97X is designed for operation on 105-125 volts 50-60 cycles a-c supply, or 105-125 volts d-c. It may be used for 25-cycle operation by adding an electrolytic capacitor, as described below. Model 97X has push-buttons for electric tuning of five stations in the standard broadcast range, and one push button for dial tuning over the entire range of 540 to 1,720 kc.



Features of design include magnetite-core i-f transformers; magnetite-core electric-tuning oscillator coils; temperature-stabilized capacitor in the oscillator circuit; automatic volume control; electrodynamic speaker; straight-line dial; and continuously-variable high-frequency tone control.

Power Supply Polarity.—On d-c operation, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. On a-c operation, a similar reversal of the plug may reduce hum.

25-Cycle Operation.—For operation with 25-cycle power supply, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C16.

First Edition

Printed in U. S. A.

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

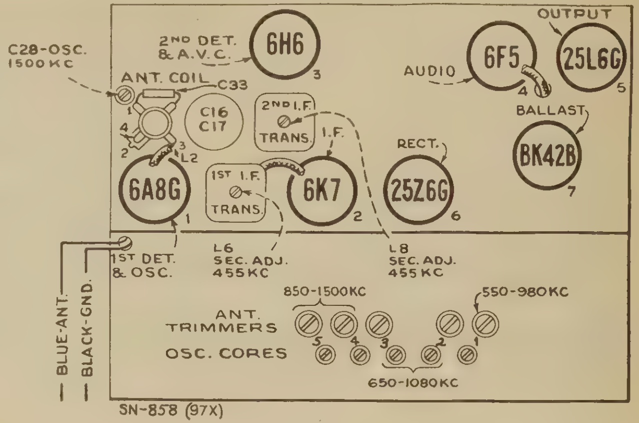
Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

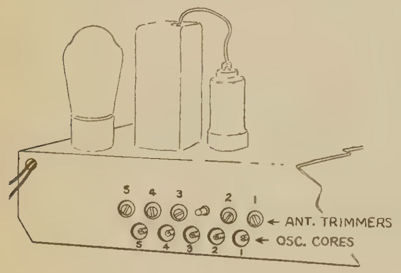


Tube and Trimmer Locations

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark.	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

* Use minimum capacity peak if two peaks can be obtained.

The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.



Push-Button Adjustments

No. 1—Approximately 550-980 kc.
Nos. 2, 3—Approximately 650-1,080 kc.
Nos. 4, 5—Approximately 850-1,500 kc.

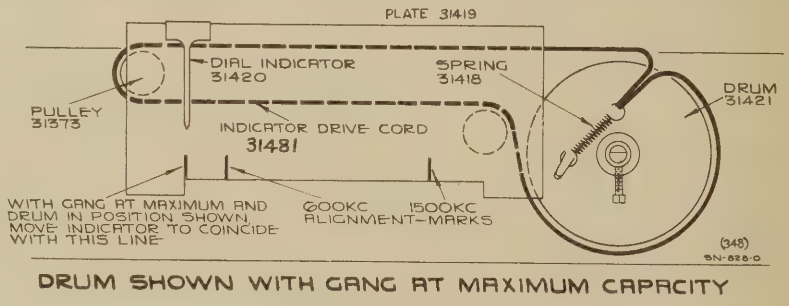


PLATE 31419
DIAL INDICATOR 31420
SPRING 31418
DRUM 31421
PULLEY 31373
INDICATOR DRIVE CORD 31481
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN MOVE INDICATOR TO COINCIDE WITH THIS LINE
600KC 1500KC ALIGNMENT-MARKS
(348)
SN-828-0
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

Adjustments for Electric Tuning

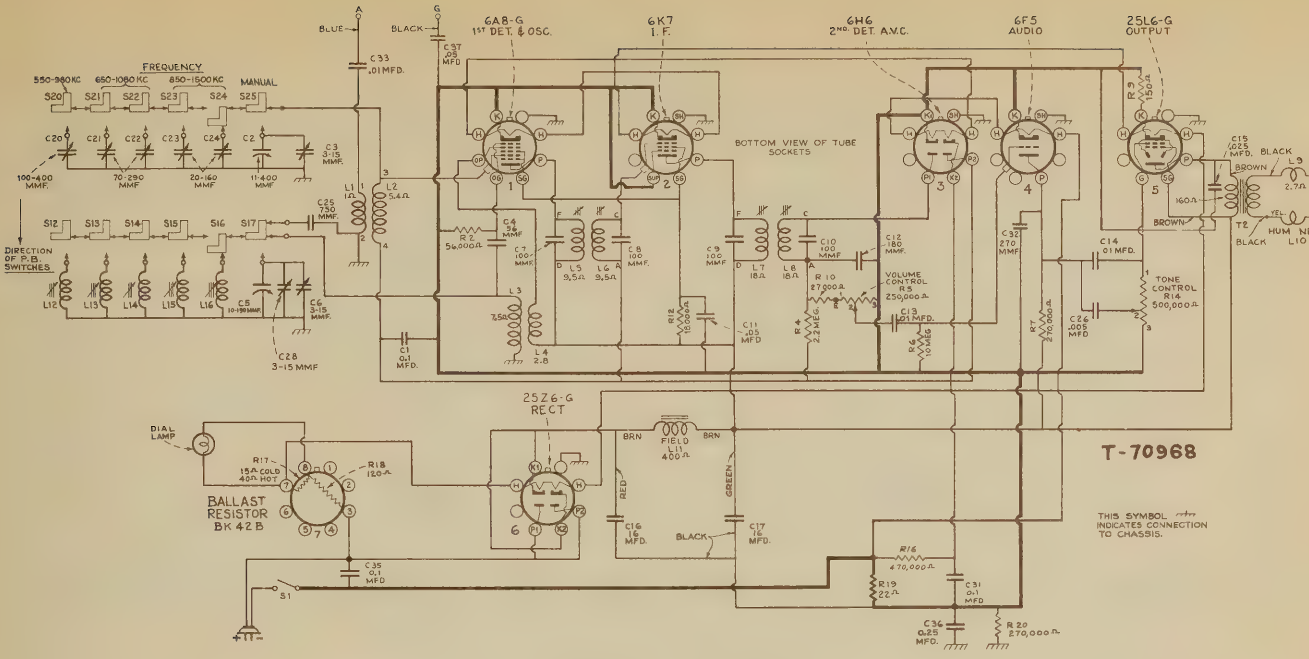
These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

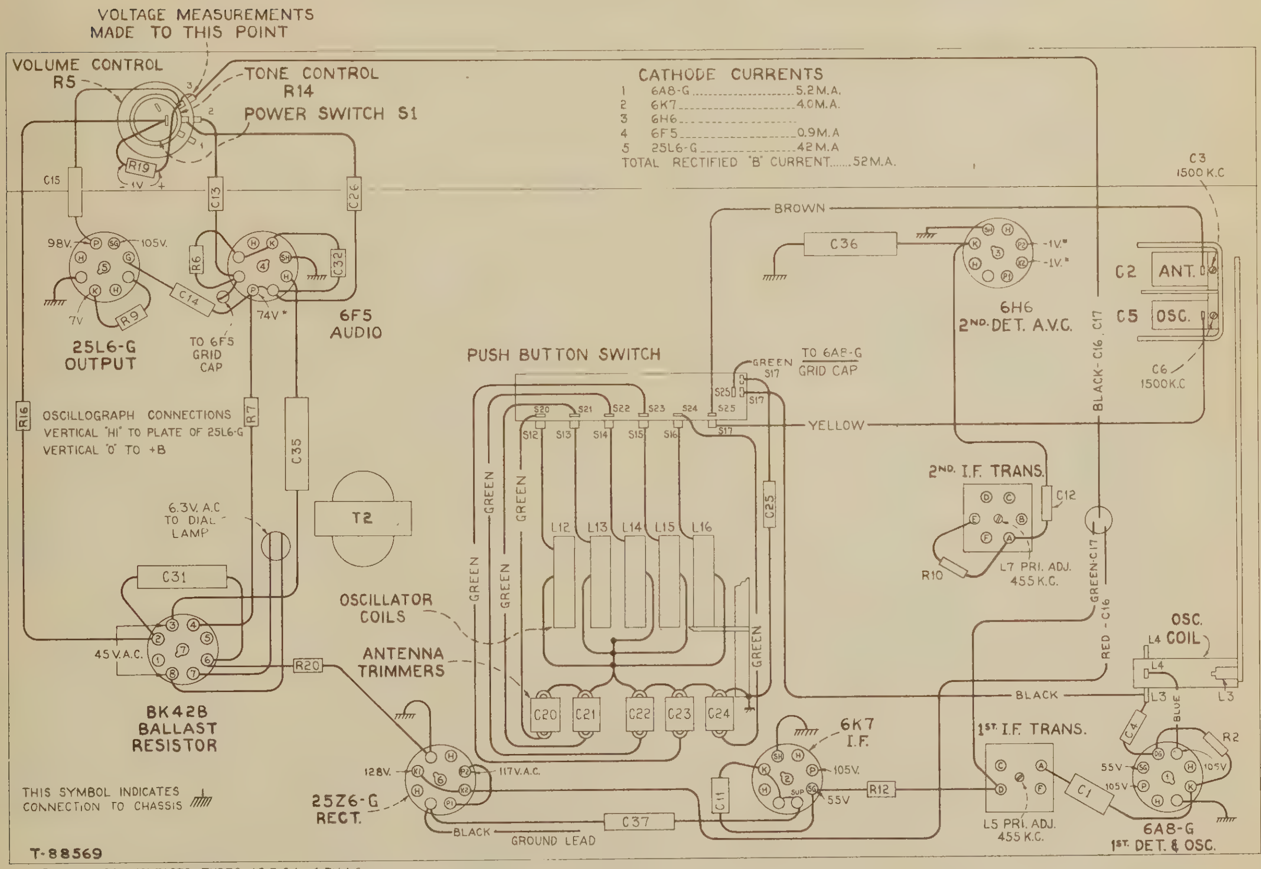
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.



Schematic Circuit Diagram



CATHODE CURRENTS

1	6A8-G	5.2 M.A.
2	6K7	4.0 M.A.
3	6H6	
4	6F5	0.9 M.A
5	25L6-G	42 M.A

TOTAL RECTIFIED "B" CURRENT......52 M.A.

NOTE. HEATERS VOLTAGES TUBES 1,2,3, & 4 = 6.3V. A.C
TUBES 5 & 6 = 25V. A.C.

R-F Wiring Diagram and Socket Voltages

Measurements made to low-side of volume control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

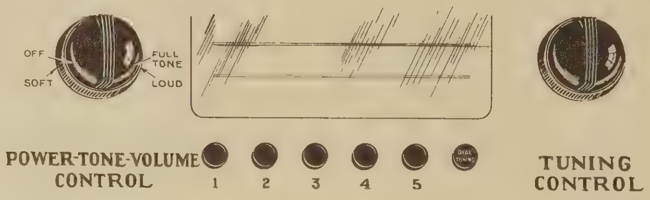
Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover by applying acetone sparingly, then loosen the spider screws, insert three narrow feelers in the gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

Removing Push-Button Assembly.—The push-button assembly is held to the chassis by two nuts on the front apron, and may be quickly and easily swung out for convenient access to the sockets and other parts. No unsoldering is required, as flexible leads are used for all connections from the chassis to the assembly.

Precautionary Lead Dress.—

1. Dress green lead from antenna coil to switch away from the chassis and gang.
2. Dress green leads from trimmer bank away from the oscillator-core adjustment screws.
3. Dress heater lead from 6H6 to 6A8-G away from the 2nd I.F. transformer.
4. Dress black lead from electrolytic to volume control against front apron.



Location of Controls
The right-hand push button is for dial tuning

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
31483	Ballast—Ballast resistor tube type BK42-B (R17, R18)	
14338	Bushing—Variable tuning condenser mounting bushing and hardware	
31416	Capacitor—Antenna coil trimmer capacitor bank (C20, C21, C22, C23, C24)	
12723	Capacitor—56 mmfd. (C4)	
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	
13003	Capacitor—180 mmfd. (C12)	
12488	Capacitor—270 mmfd. (C32)	
31435	Capacitor—750 mmfd. (C25)	
4838	Capacitor—.005 mfd. (C26)	
4870	Capacitor—.025 mfd. (C15)	
14393	Capacitor—.01 mfd. (C13, C14, C33)	
4886	Capacitor—.05 mfd. (C37)	
30882	Capacitor—.05 mfd. (C11)	
4839	Capacitor—0.1 mfd. (C1, C31, C35)	
12484	Capacitor—0.25 mfd. (C36)	
31479	Capacitor—Comprising two sections of 16 mfd. each (C16, C17)	
30894	Coil—Antenna coil (L1, L2)	
31098	Coil—Oscillator coil (L3, L4)	
31383	Coil—Push button oscillator coil (L15, L16)	
31384	Coil—Push button oscillator coil (L13, L14)	
31415	Coil—Push button oscillator coil (L12)	
31422	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28)	
31413	Control—Volume control, tone control and on-off switch (R5, R14, S1)	
31481	Cord—Drive cord—36-in. long silk cord	
30905	Core—Adjustable core assembly for i.f. transformer	
31386	Core—Adjustable core and stud for oscillator coils	
31421	Drum—Indicator drive drum and hub	
31420	Indicator—Station selector indicator pointer	
31480	Lamp—Dial lamp	
31419	Plate—Colored dial plate comprising plate, spacers and screws	
31373	Pulley—Indicator drive cord pulley	
31483	Resistor—Ballast resistor tube type BK42-B (R17, R18)	
14525	Resistor—22 ohms, ¼ watt (R19)	
30880	Resistor—150 ohms, ½ watt (R9)	
13045	Resistor—18,000 ohms, ¼ watt (R12)	
12738	Resistor—27,000 ohms, ¼ watt (R10)	
12286	Resistor—56,000 ohms, ¼ watt (R2)	
12199	Resistor—270,000 ohms, ¼ watt (R7, R20)	
12285	Resistor—470,000 ohms, ¼ watt (R16)	
12679	Resistor—2.2 megohm, ¼ watt (R4)	
13601	Resistor—10 megohm, ¼ watt (R6)	
14887	Retainer—Indicator drive cord pulley retainer	
31482	Screw—No. 8 square head set screw for drum Stock No. 31421	
31365	Socket—Dial lamp socket	
31251	Socket—Tube socket	
31418	Spring—Indicator drive cord tension spring	
31414	Switch—Selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	
30957	Transformer—1st i.f. transformer (L5, L6, C7, C8)	
30903	Transformer—2nd i.f. transformer (L7, L8, C9, C10)	
31484	Transformer—Output transformer (T2)	
31483	Tube—Ballast resistor tube type BK42-B (R17, R18)	
	SPEAKER ASSEMBLIES (Speaker No. 84326-3)	
31486	Cone—Speaker cone and voice coil (L9)	
31485	Speaker—Speaker complete	
	MISCELLANEOUS ASSEMBLIES	
31428	Button—Station selector push button	
31487	Clip—Spring clip and washers to hold dial scale	
31429	Dial—Station selector dial scale	
31095	Disc—10 protector discs for call letter markers	
31355	Knob—Station selector knob	
30773	Knob—Tone control or dummy knob	
31391	Knob—Volume control knob	
30991	Marker—Station call letter push button markers	
31488	Mounting—Chassis mounting screw and washer	
14270	Spring—Retaining spring for knob Stock No. 30773 and 31355	
30330	Spring—Retaining spring for knob Stock No. 31391	

RCA Victor

MODELS 97Y, 98X, 98EY, 98YG

Chassis No.	RC-352A	RC-352	RC-352	RC-352

Seven- and Eight-Tube, Three-Band, Electric-Tuning, AC-DC Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 30—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical Specifications

FREQUENCY RANGES	
"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7 mc
"Short Wave" (C)	7-22 mc

R-F ALIGNMENT FREQUENCIES	
"Short Wave" (C)	20 mc (osc., ant.)
"Medium Wave" (B)	6.1 mc (osc.)
"Standard Broadcast" (A)	1,500 kc (osc.)

Intermediate Frequency.................... 455 kc

Six Electric Tuning Positions.................. 550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

RCA TUBE COMPLEMENT	
(1) RCA-6K8	First-Detector—Oscillator
(2) RCA-6K7	Intermediate-Frequency Amplifier
(3) RCA-6H6	Second-Detector and A.V.C.
(4) RCA-6J7	Audio Voltage Amplifier
(5) RCA-25L6	Audio Power Amplifier
(6) RCA-25Z6	Half-Wave Rectifier
RCA-6U5 (Models 98X, 98EY, 98YG)	Tuning Tube
RCA Stock No. 31577 (Models 98X, 98EY, 98YG)	Ballast Tube
RCA-BK36C (Model 97Y)	Ballast Tube

Pilot Lamps (2 on Model 97Y) (3 on Models 98X, 98EY, 98YG).................. Mazda 47, 6.3 volts, .15 amp.

POWER OUTPUT	
Undistorted	1.5 watts
Maximum	2.5 watts

POWER SUPPLY RATING	
A-C Rating	105-125 volts, 25-60 cycles, 55 watts
D-C Rating	105-125 volts, 55 watts

LOUDSPEAKER (PERMANENT-MAGNET DYNAMIC)	97Y	98X	98EY	98YG
Diameter	12 inches	6 inches	8 inches	12 inches
V. C. Impedance at 400 cycles	2.2 ohms	3 ohms	2.2 ohms	2.2 ohms

Mechanical Specifications

Models	97Y	98X	98EY	98YG
Height (inches)	37¼	12 15/16	23 11/16	35
Width (inches)	22	15⅝	28	32
Depth (inches)	10	8½	14 13/32	12 7/16
Net Weight (pounds)	46	20	50	53
Shipping Weight	60	26	57	70

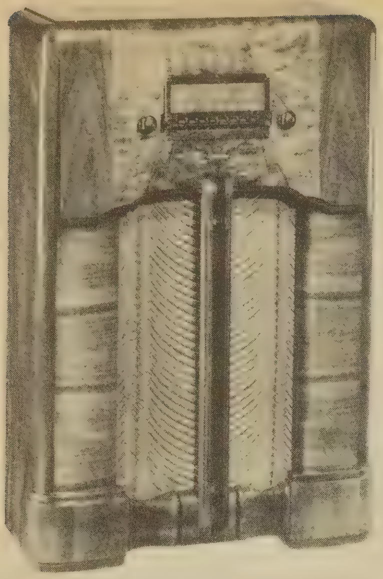
Chassis Base Dimensions.................. 13-in. wide, 6½-in. deep, 2½-in. high
Over-all Chassis Height.................. 6 inches
Tuning Drive Ratio.................. 12 to 1

General Description

The eight-tube models have a "Magic Eye" tuning tube and illuminated indicator to show when the set is being operated on electric tuning. All models have electric tuning for six stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; switch and terminals for Victrola attachment; straight-line dial; dust-proof electrodynamic loudspeaker.

First Edition
Trademarks "Victrola," "Magic Eye" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.
Printed in U. S. A.



Model 98EY →

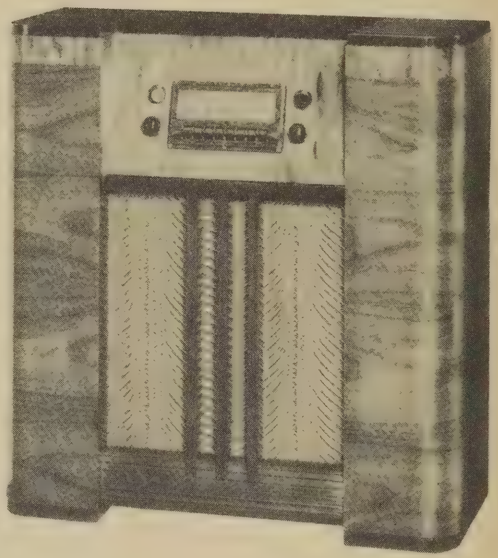
END TABLE
8 Tubes, Including
Ballast. 8-inch
Speaker

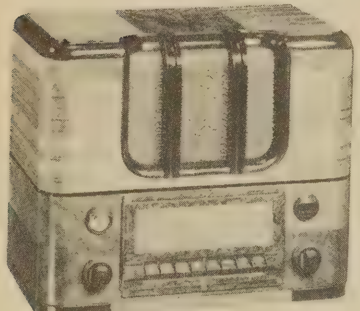
← Model 97Y

CONSOLE
7 Tubes, Including
Ballast. 12-inch
Speaker

Model 98YG →

CONSOLE GRAND
8 Tubes, Including
Ballast. 12-inch
Speaker

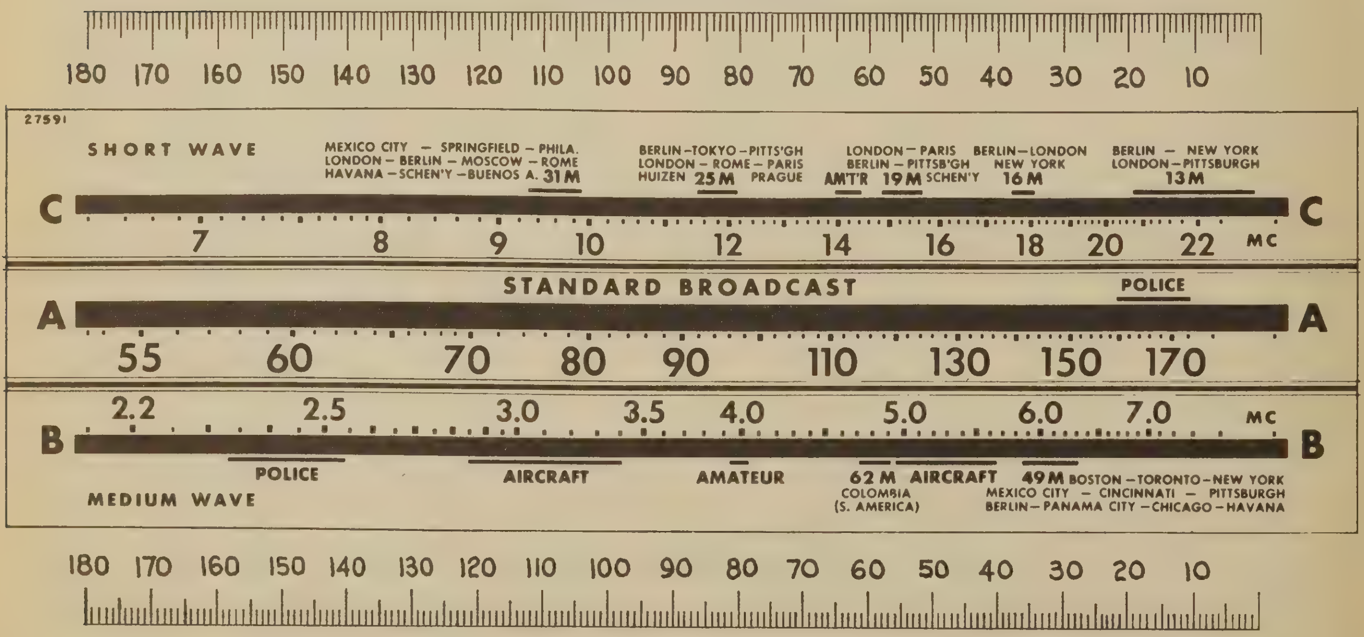




← Model 98X

TABLE MODEL
8 Tubes, Including
Ballast. 6-inch
Speaker

Calibration Scale



Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 28½° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

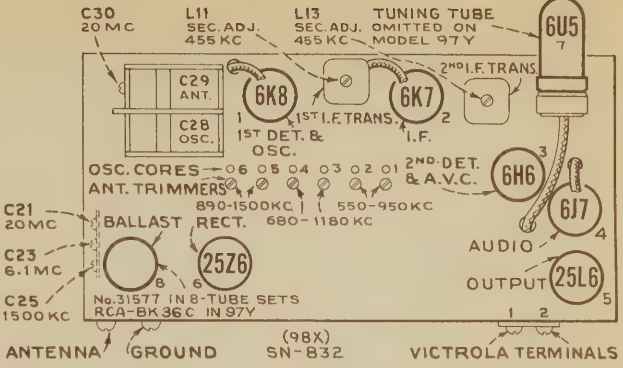
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord drum. — The tuning dial if fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	20 mc	20 mc (23°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 400 ohms	6.1 mc	6.1 mc (31°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

* Use **minimum** capacity peak if two peaks can be obtained.

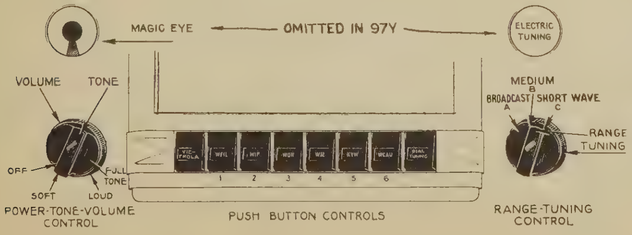
** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by turning to approximately 49° (5.19 mc), at which point a weaker signal should be received.

Note: Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.



Location of Controls

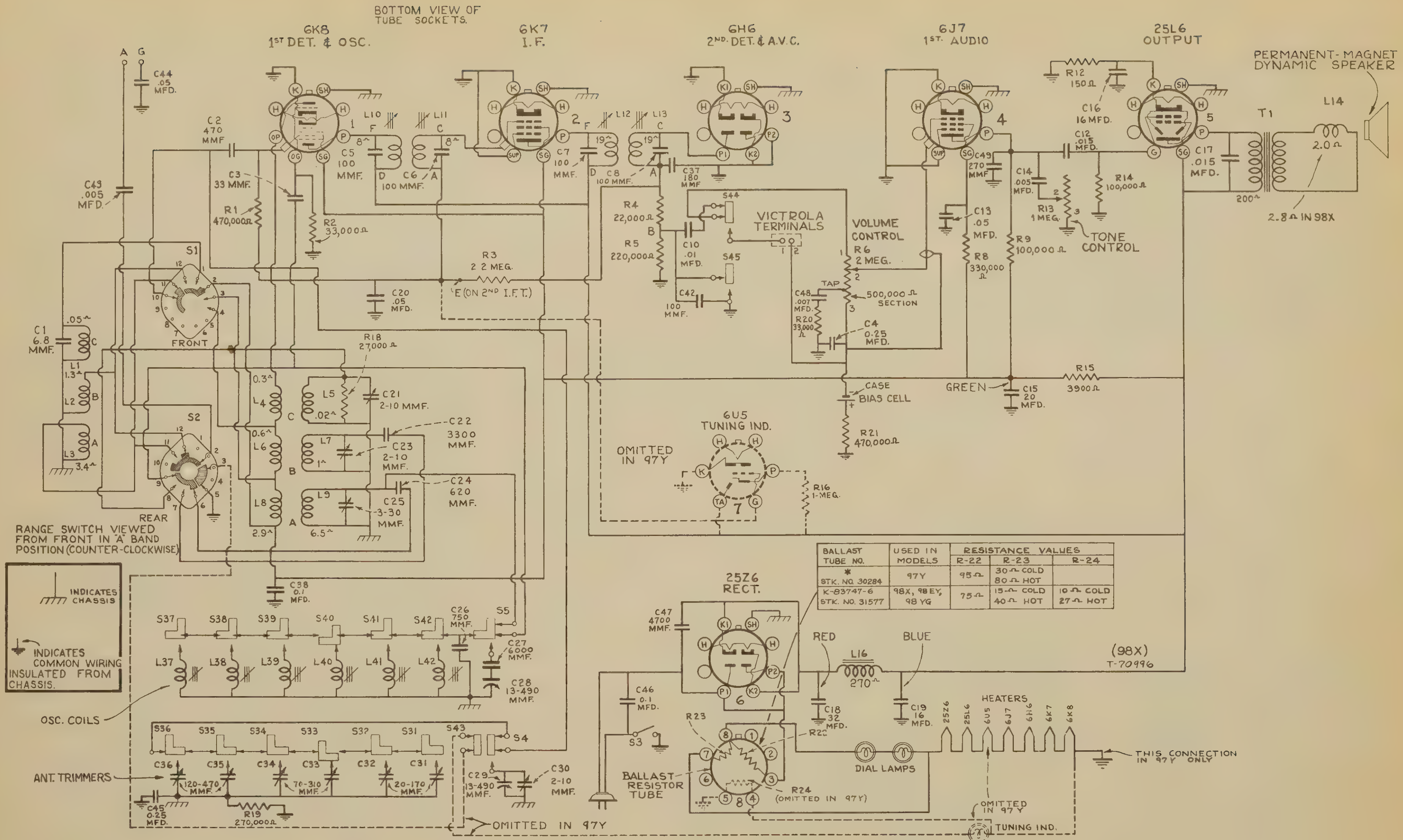
The left-hand push-button is a Victrola-Attachment switch.
The right-hand push-button is for dial tuning.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the "Magic Eye" in Models 98X, 98EY, 98YG to ensure sharp peaking. With Model 97Y use one or two feet of wire as an antenna when making the final adjustments in order to obtain sharp peaking.



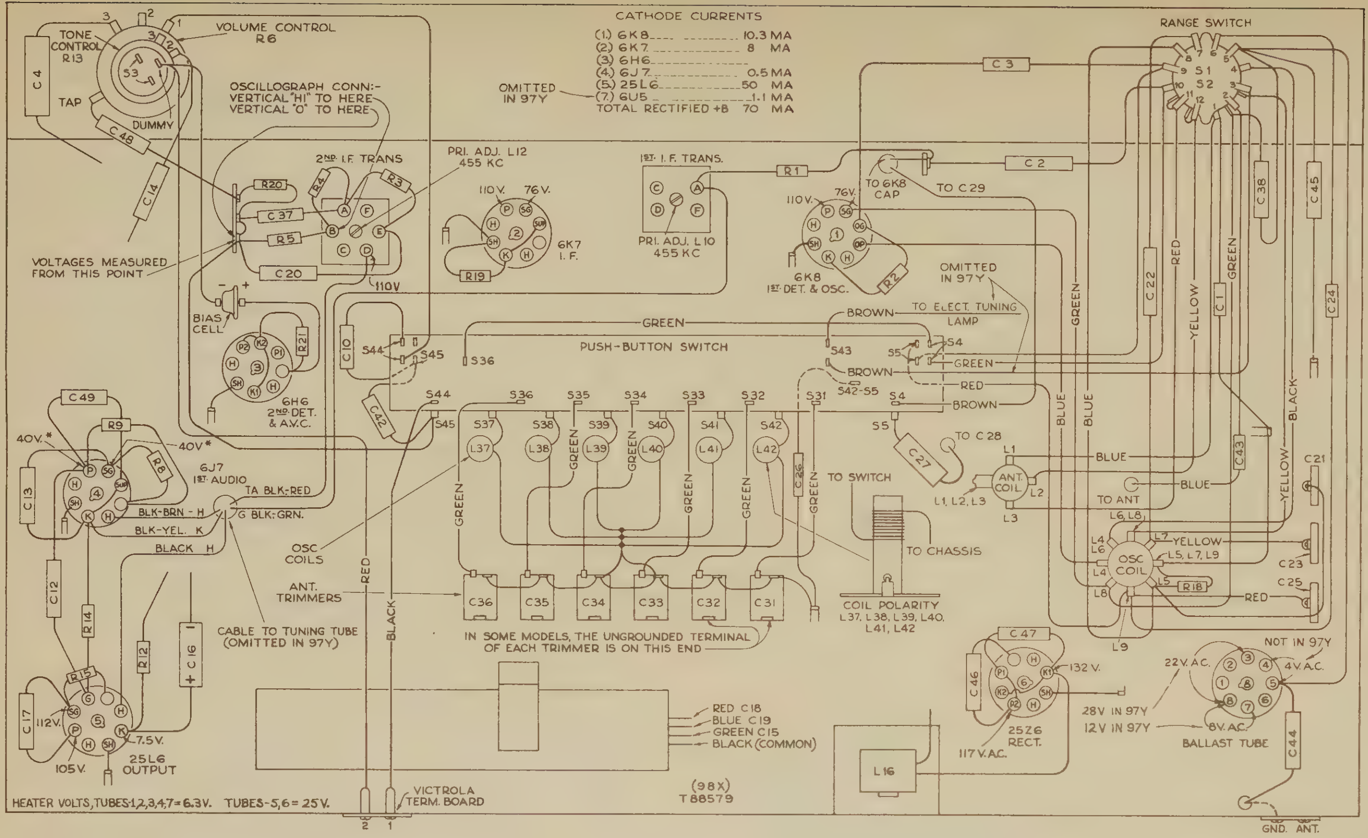
BALLAST TUBE NO.	USED IN MODELS	RESISTANCE VALUES		
		R-22	R-23	R-24
* STK. NO. 30284	97Y	95Ω	30Ω COLD 80Ω HOT	
K-83747-6 STK. NO. 31577	98X, 98EY, 98 YG	75Ω	15Ω COLD 40Ω HOT	10Ω COLD 27Ω HOT

Schematic Circuit Diagram

* The ballast tube in Model 97Y is RCA-BK36B

Precautionary Lead Dress.—

1. Dress the bias cell clear of all bus leads.
2. Dress R1 away from front of chassis.
3. Leads from S43 must be dressed in front of range switch.
4. Blue lead from range switch to L5 must be short and clear of other leads.
5. Dress leads away from antenna coil.
6. Leads across back of chassis must be dressed under electrolytic to prevent approaching Victrola jack.

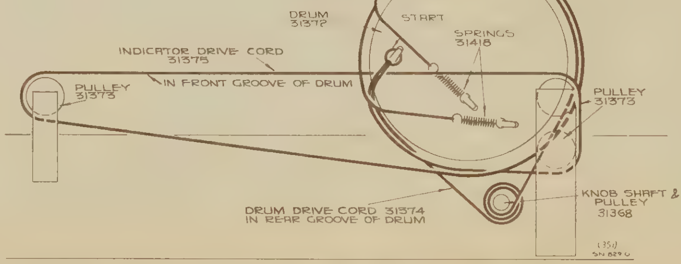


R-F Wiring Diagram and Socket Voltages

Measurements made to low-side of tone control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

At Right.—Arrangement of Drive Cords for Tuning Condenser and Dial Indicator


DRUM 31372
START
SPRINGS 31418
INDICATOR DRIVE CORD 31375
IN FRONT GROOVE OF DRUM
PULLEY 31373
PULLEY 31373
KNOB SHAFT & PULLEY 31368
DRUM DRIVE CORD 31374 IN REAR GROOVE OF DRUM

DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Miscellaneous Service Notes

Bias Cell. — The bias cell provides approximately 1-volt bias for the 1st-audio grid. **The cell should never be shorted, not measured with an ordinary voltmeter or other device that draws current.** The cell may be checked by measuring the 1st-audio cathode current with a new tested 6J7 tube in this socket. The current should be approximately ½ milliampere. If it is appreciably greater than ½ mil., install a new bias cell.

Victrola Atachment. — Two screw-type terminals, numbered 1 and 2, are provided on the rear apron of the chassis for connection to a Victrola Attachment, such as the R-93, R-93-B, etc. *(When A-C supply is available.)*

Care must be taken that these terminals are never connected in any way to the chassis, otherwise injury will result to the bias cell. To safeguard against this possibility, the following precautions should be observed in connecting the Victrola Attachment to the receiver.

Victrola Attachment with shielded cable. — If the shielded cable has a plug connector, remove the plug, connect the shielding to terminal 1, and connect the lead (inside the shielding) to terminal 2. Tape the shielding for a sufficient distance to prevent the possibility of it shorting against the chassis.

Victrola Attachment with twisted-pair cable.—Connect the low-side of the Attachment to terminal No. 1, and the high-side of the Attachment to terminal No. 2. (In some Attachments, the lead from the low-side is black, and the lead from the high-side is black-brown.)

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. For operation on a-c, a similar reversal of the plug may reduce hum.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover by applying acetone sparingly, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
31577	Ballast—Ballast resistor tube (R22, R23, R24) Models 98X, 98EY and 98YG	
30284	Ballast—Ballast resistor tube (R22, R23) Model 97Y	
31767	Board—Antenna-ground terminal board	
31579	Board—Phonograph terminal board	
30752	Bracket—Bracket for holding Magic Eye tube—Models 98X, 98EY and 98YG	
14338	Bushing—Variable condenser mounting bushing and screws	
31400	Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25)	
14079	Capacitor—6.8 mmfd. (C1)	
31387	Capacitor—Antenna coil trimmer capacitor bank—20-470 mmfd. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 mmfd. (C3)	
12720	Capacitor—100 mmfd. (C42)	
13003	Capacitor—180 mmfd. (C37)	
12488	Capacitor—270 mmfd. (C49)	
30433	Capacitor—470 mmfd. (C2)	
31381	Capacitor—620 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
4881	Capacitor—3300 mmfd. (C22)	
12897	Capacitor—4700 mmfd. (C47)	
31405	Capacitor—6000 mmfd. (C27)	
5148	Capacitor—.007 mfd. (C48)	
4838	Capacitor—.005 mfd. (C14, C43)	
14393	Capacitor—.01 mfd. (C10)	
11315	Capacitor—.015 mfd. (C12, C17)	
4886	Capacitor—.05 mfd. (C13, C20, C44)	
4839	Capacitor—0.1 mfd. (C38, C46)	
12484	Capacitor—0.25 mfd. (C4, C45)	
31323	Capacitor—16 mfd. (C16)	
31576	Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19)	
30904	Capacitor—100 mfd. (C5, C6, C7, C8)	
31581	Cell—Bias cell	
31382	Clip—Mounting clip for coils and cores on oscillator bank	
31402	Coil—Antenna coil (L1, L2, L3)	
31401	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24)	
31385	Coil—Push button oscillator coil (L37, L38)	
31384	Coil—Push button oscillator coil (L39, L40)	
31383	Coil—Push button oscillator coil (L41, L42)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
5119	Connector—3-contact female connector plug for reproducer cable	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31374	Cord—Indicator pointer drive cord	
31375	Cord—Indicator pointer drive cord	
30905	Core—Adjustable core for i-f transformer	
31386	Core—Adjustable core and stud assembly for oscillator bank	
31372	Drum—Variable condenser drive cord drum and calibrator	
31580	Holder—Bias cell holder	
31480	Lamp—Dial lamp	
31373	Pulley—Drive cord pulley	
5066	Reactor (L16)	
31577	Resistor—Ballast resistor (R22, R23, R24)—Models 98X, 98EY and 98YG	
30284	Resistor—Ballast resistor (R22, R23)—Model 97Y	
30880	Resistor—150 ohms, ½ watt (R12)	
30694	Resistor—3,900 ohms, ½ watt (R15)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R18)	
12454	Resistor—33,000 ohms, ¼ watt (R2, R20)	
14560	Resistor—100,000 ohms, ¼ watt (R9, R14)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R19)	
14983	Resistor—330,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R1, R21)	
12013	Resistor—1 meg. 1/10 watt (R16) Models 98X, 98EY and 98YG	
12679	Resistor—2.2 meg, ¼ watt (R3)	
14343	Retainer—Drive cord pulley retainer	
14887	Retainer—Retainer for drive cord pulley	
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31199	Shield—Dial lamp shield	
12110	Shield—Radiotron shield cap	
31365	Socket—Dial lamp socket	
13871	Socket—Magic Eye socket—Models 98X, 98EY and 98YG	
31251	Socket—Tube socket	
31313	Spring—Tension spring for station selector push button switch latch bar	
31418	Spring—Indicator or drum drive cord tension spring	
31370	Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
31398	Switch—Range switch (S1, S2)	
30957	Transformer—First i-f transformer (L10, L11, C5, C6)	
30903	Transformer—Second i-f transformer (L12, L13, C7, C8)	
31577	Tube—Ballast resistor tube (R22, R23, R24)—Models 98X, 98EY and 98YG	
30284	Tube — Ballast resistor tube (R22, R23)—Model 97Y	
	SPEAKER ASSEMBLIES Model 98X (84307-1)	
31665	Cone—Speaker cone and voice coil (L14)	
5118	Plug—3 contact male plug for speaker	
31664	Speaker complete	
31666	Transformer—Output transformer (T1)	
	SPEAKER ASSEMBLIES Models 97Y and 98YG (Speaker RL 71 A-1)	
31275	Cone—Speaker cone and voice coil (L14)	
5118	Plug—3 Contact male plug for speaker	
31798	Speaker—Less output transformer	
14628	Transformer—Output transformer (T1)	
	SPEAKER ASSEMBLIES Model 98EY (Speaker RL 73-5)	
31310	Cone—Speaker cone and voice coil (L14)	
5118	Plug—3 Contact male plug for speaker	
31997	Speaker Complete	
14628	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
12038	Band—Rubber band shield for Magic Eye—Models 98X, 98EY and 98YG	
31397	Button—Station selector push button	
31456	Cover — 8-protective covers for push button markers	
31394	Clip—Pointer travel stop clip	
31406	Dial—Station selector dial scale	
31543	Disc—Electric Tuning indicator disc — Models 98X, 98EY and 98YG	
31407	Escutcheon—Magic Eye or Electric Tuning indicator escutcheon—Models 98X, 98EY and 98YG	
31395	Escutcheon—Station selector escutcheon less dial scale and push buttons	
31392	Indicator—Station selector indicator pointer	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31458	Marker—"Dial Tuning" push button marker	
31457	Marker—"Record Player" push button marker	
31589	Marker—Station call letters push button markers	
31393	Screen—Color screen for dial frame	
4982	Spring—Retaining spring for knob Stock No. 14359	
30330	Spring—Retaining spring for knob Stock No. 31391	
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	

RCA Victor

PSU 8A, 8B, 8C, 10A, 10B and 10C
A-C Power Supply Units
TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

General Description

Certain models of the "Q" Line of RCA Victor "Magic Brain" 1938 radio receivers are designed for use with a separate plug-in power supply unit. Different units are available to permit operation on a-c power supplies of various voltages and cycles, and also on 110 or 220 volts d-c.

Service data and diagrams for the a-c units are contained in this sheet: The d-c units are described in a separate sheet.

Each a-c unit is equipped with an 18-inch 6-wire cable with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The a-c power cord is 6 feet long. The units are approximately 7½ inches long, 4¼ inches wide, and 6 inches high.

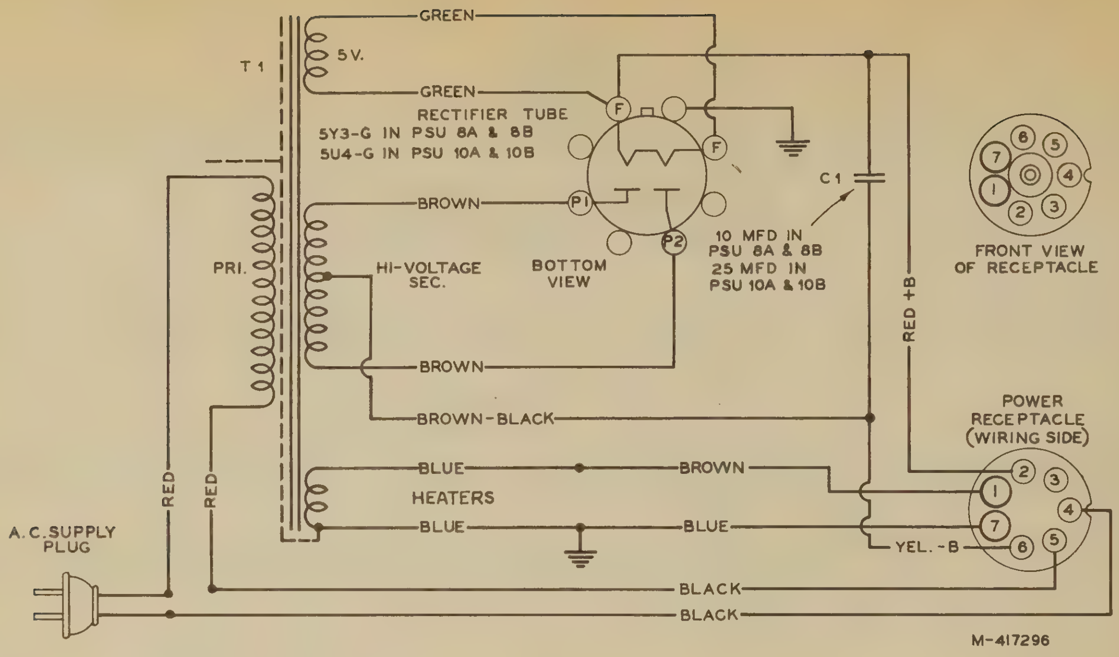
Testing.—To check an a-c power unit when a receiver is not available, connect a 50-watt resistor (4,800 ohms for PSU 8A, 8B, 8C, and 3,450 ohms for PSU 10A, 10B and 10C) across contacts 2 and 6 on the power receptacle. Connect a jumper across contacts 4 and 5. Measure the d-c voltage across the resistor, which should be approximately 375 volts, with 117 volts supply on the 117-volt tap.

Specifications

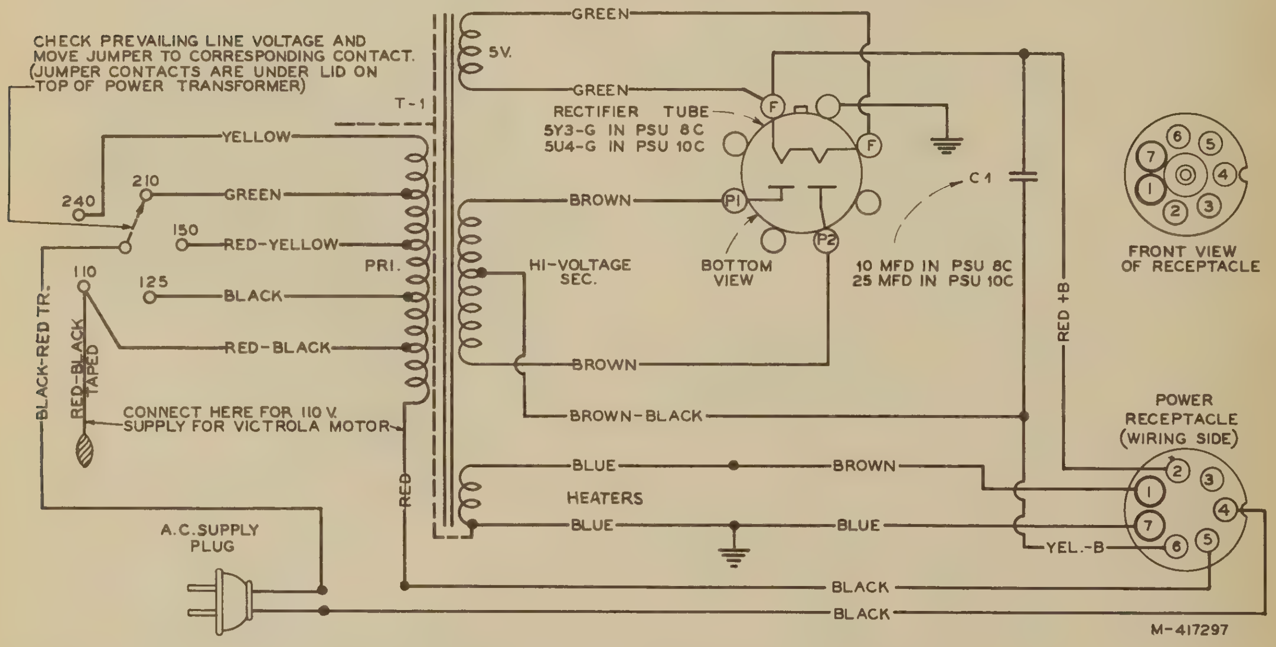
Type	Rating		Radiotron Rectifier	D-C Output	Heater (A-C)	Used with Models	D-C Resis., T1		Net Weight (pounds)
	Voltage	Cycles					Pri. ohms Total	Sec. ohms Total	
PSU 8A	105-125	50/60	5Y3-G	375 volts at 78 milliamps	6.45 V 3 amps	8Q1 and 8Q4	6.4	535	7
PSU 8B	105-125	25/60					8.3	705	9½
PSU 8C	Universal*	50/60					17.4	455	11½
PSU 10A	105-125	50/60	5U4-G	380 volts at 110 milliamps	6.36 V 5 amps	10Q1, 12Q4, 12QK, 12QU**	3.0	250	9
PSU 10B	105-125	25/60					3.9	250	13
PSU 10C	Universal*	50/60					8.9	190	15

* The universal can be set for 105-117, 117-130, 140-160, 200-225, or 225-250 volt supply.
** Model 12QU has a phonograph motor designed for 50/60 cycle operation only, and uses either PSU 10A, or 10C.

First Edition — Trademark "Radiotron," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc. — Printed in U.S.A.



Schematic Circuit Diagram of Power Supply Units PSU 8A, 8B, 10A, and 10B



Schematic Diagram of Power Supply Units PSU 8C and 10C

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION		STOCK No.	DESCRIPTION	
31739	Cable—6-conductor power output cable with plug		31734	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 8B only).........	
11203	Capacitor—10 mfd. (C1) (PSU 8A, 8B or 8C only)................................		31737	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 10B only)........	
14531	Capacitor—25 mfd. (C1) (PSU 10A, 10B or 10C only)..............................		31735	Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 8C only)................................	
14409	Plug—7-contact plug for power output cable..		31738	Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 10C only)............................	
31251	Socket—Rectifier tube socket................				
31733	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 8A only).........				
31736	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 10A only)........				

RCA Victor

PSU 8E and 10E D-C Power Supply Units

TECHNICAL INFORMATION AND SERVICE DATA

—1938—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Each d-c unit is equipped with an 18-inch 7-wire cable, with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The d-c power cord (double conductor) is 6-feet long and is provided with a fused plug. The units are approximately 12½-inches long, 5½-inches wide, and 8½-inches high.

GOOD GROUND IS ESSENTIAL.—It is necessary to provide a good ground connection to the receiver chassis. The ground lead should be heavy wire, as short as possible, connected to a water pipe by means of an approved ground clamp. If a water pipe ground is not available, a buried metal plate or screen may be used. This should have an area of approximately 20 square feet and should be buried one or two feet in moist ground. The connection to the plate should be electrically good, mechanically solid, and permanent.

Grounding Power Supply Unit.—A flexible metal braid is connected from the PSU chassis to the case of the unit, and another length of braid extends from the case for connection to the receiver chassis. Loosen one of the self-tapping screws on the rear of the chassis, and attach the braid under this screw. It is important to see that these connections are made correctly at the time of installation.

Magic Wave Antenna Recommended.—In cases where the line or vibrator interference is found to be objectionable, the use of an RCA Magic Wave Antenna (Stock No. 9812) is recommended in conjunction with a good ground as specified above.

Link Board for Changing from 117 to 234 Volts.—A link board is mounted under the chassis of the PSU for making connections to permit operation on 105-125 volts d.c., or on 210-250 volts d.c. The correct position of the links for each voltage range is shown in the schematic diagram. **The links must be arranged correctly in the link board for the particular voltage range on which the unit is to be operated, otherwise damage to the receiver may result.**

Vibrator Plug.—The heater windings on the power transformer are tapped and connected to a six-contact socket on the rear of the PSU chassis. A plug fits into this socket in two positions only. An arrow on the plug points to markings "NEW" or "OLD" on the case of the unit. When the vibrator is new, the plug is inserted with the arrow pointing to "NEW." In the course of time, when the vibrator is worn to an extent where the dial lights burn dull or red instead of with their usual brilliancy, the plug should be removed and re-inserted with the arrow pointing to "OLD." (In this position, all the turns of the heater windings are connected, thus bringing the heater voltage up to normal.)

The number of operating hours to the time when it is necessary to turn the plug to "OLD" is not an indication of the ultimate life of the vibrator: For example, with high line voltage, the plug may usually be left at "NEW" for practically the entire useful life of the vibrator; but with low line voltage, it may be necessary to turn the plug to "OLD" after a time corresponding to a small fraction of the total life of the vibrator.

Testing.—The simplest way to check PSU 8E or 10E is to plug it into a receiver for which it is designed. (First check the position of the links for the particular line voltage.) Note whether the dial lamps in the receiver light with normal brilliancy, and measure the rectified "B" voltage at the receiver to determine whether it is normal.

If a receiver is not available, dummy loads may be connected to the unit as specified in the table below.

The supply current must be measured with a d-c ammeter, not a meter of the ac-dc type, inasmuch as the r.m.s. value of the current is considerably higher than the d-c current. The heater voltage must be measured with an r.m.s. meter (thermo-coupled), not with an average meter (rectifier type), on account of the square wave shape. If an accurate thermo-coupled meter is not available, the heater voltage may be checked by observing the brilliancy of the dial lamps in the receiver. They will glow dull or red if the heater voltage is low.

Precautionary Lead Dress. — (1) Dress all leads on the power transformer primary and the buffer capacitors away from the line chokes. (2) Leads to C19 must be as short as possible. (3) The rectifier filament leads should be run close to each other, and dressed away from the filter chokes. (4) D-C power cord must not touch power transformer. (5) Keep antenna and ground leads away from PSU and PSU cables.

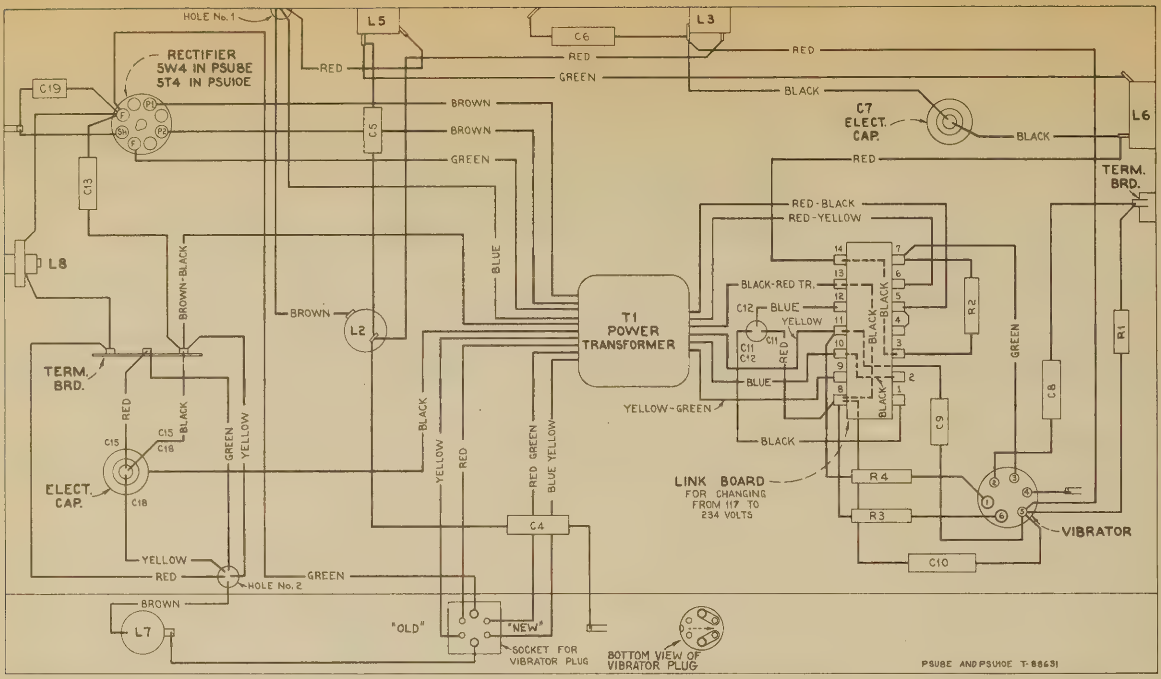
PSU	Supply Volts DC	Heater Load (ohms)	Rectifier Load (ohms)	Supply Current D-C amps.	Heater Voltage (A.C.)		Rectified Voltage (D.C.)		Used With Models
					Max.	Min.	Max.	Min.	
8E	117	2.2	4,900	0.90	7.85	7.1	400	360	8Q1, and 8Q4
	234	2.2	4,900	0.50	7.85	7.1	400	360	
10E	117	1.4	3,400	1.10	7.4	6.6	400	360	10Q1, 12Q4, 12QK
	234	1.4	3,400	.65	7.4	6.6	400	360	

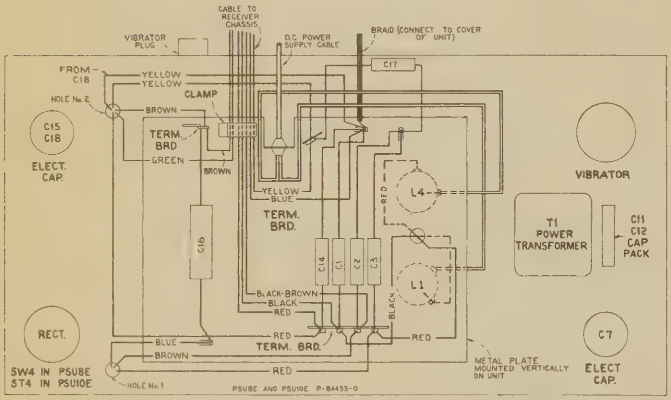
NOTE: The heater and rectifier dummy load resistors should be capable of handling 50 watts. Connect the heater load across terminals 1 and 7 on the 7-contact plug. Connect the rectifier load resistor across terminals 2 and 6 on the 7-contact plug. Connect a jumper from terminal 2 to 3, and from 4 to 5 on this plug. Check position of links before turning power on.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	DC POWER SUPPLY (PSU-8E and PSU-10E)	
12952	Capacitor—330 mmfd. (C19)	
4937	Capacitor—.01 mfd. (C9, C10)	
14626	Capacitor—.07 mfd. (C13, C14, C17)	
4839	Capacitor—0.1 mfd. (C8)	
12484	Capacitor—0.25 mfd. (C1, C2, C3, C4, C5, C6)	
32049	Capacitor—Comprising two sections of 0.5 mfd. each (C11, C12)	
32048	Capacitor—5 mfd. (C7)	
32047	Capacitor—Comprising one section 10 mfd. and one section 20 mfd. (C15, C18)	
32045	Capacitor—15 mfd. (C16)	
32046	Coil—Choke coil (L1, L2, L3, L4, L5, L6)	
31794	Coil—Choke coil (L7)	
32053	Coil—Choke coil (L8)	
5140	Fuse—5 amp. fuse	
30557	Plug—Fused plug less fuses and power cord	
32052	Plug—6-contact power change plug	
14409	Plug—7-contact female plug for power supply cable	
32064	Resistor—0.47 ohms, flexible type (R3, R4)	
4687	Resistor—1,000 ohms, ½ watt (R1)	
11768	Resistor—4,700 ohms, 2 watt (R2)	
32051	Socket—6-contact power change socket	
31251	Socket—Tube socket	
14312	Socket—Vibrator socket	
32062	Transformer—Power transformer (PSU-8E only)	
32063	Transformer—Power transformer (PSU-10E only)	
32050	Vibrator	

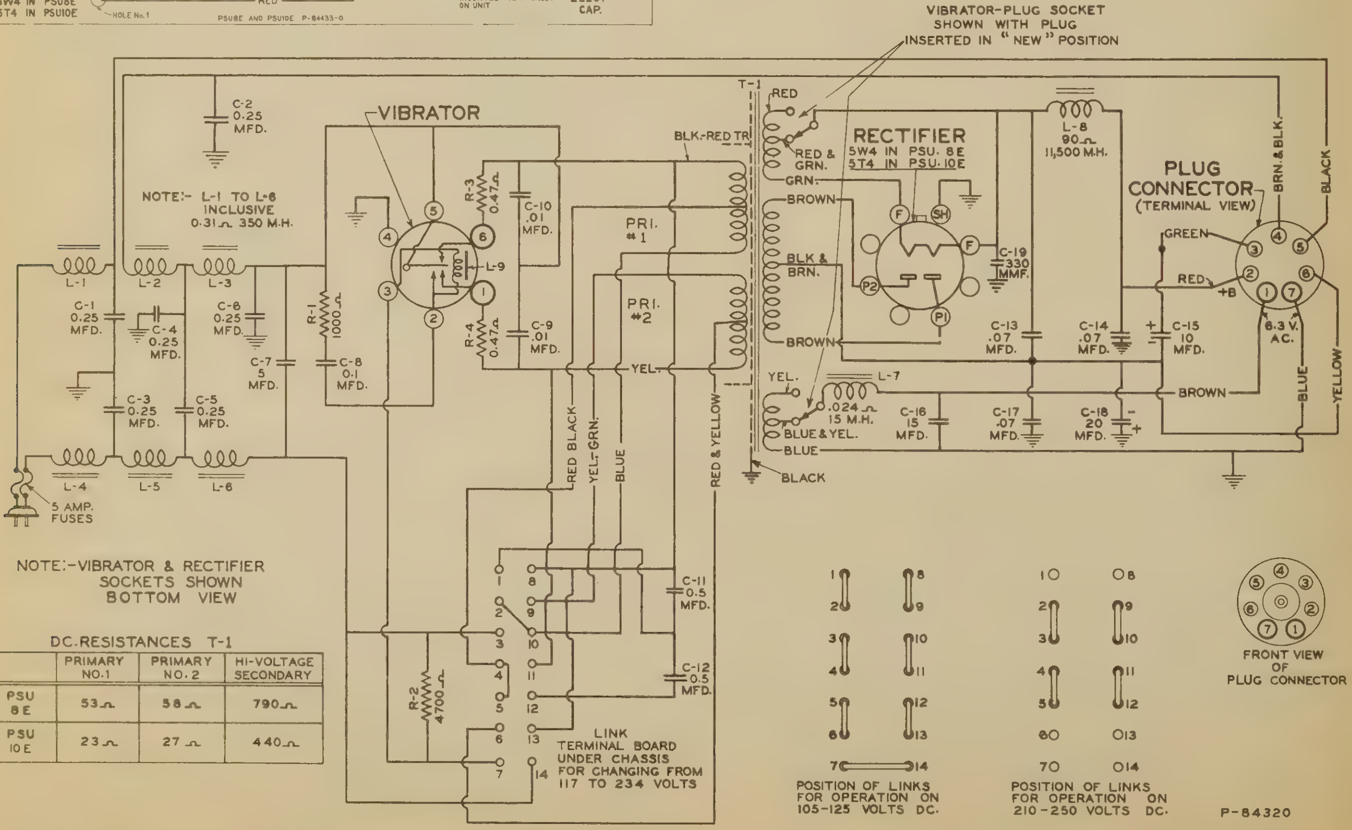




Above—
Bottom View of D-C Power Unit

At Left—
Top View of D-C Power Unit

Below—
Schematic Diagram



DC. RESISTANCES T-1

	PRIMARY NO. 1	PRIMARY NO. 2	HI-VOLTAGE SECONDARY
PSU 8E	53Ω	58Ω	790Ω
PSU 10E	23Ω	27Ω	440Ω

RCA Victor

MODEL R-89

Three-Tube, A-C, Electric Victrola (Phono. only)

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 31—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

RCA TUBE COMPLEMENT

(1) RCA-6F5	Audio Voltage Amplifier
(2) RCA-25L6	Audio Power Output
(3) RCA-25Z6	Rectifier

LOUDSPEAKER

Type	Electrodynamic
Voice Coil Impedance	4.5 ohms at 400 cycles
Undistorted	1.0 watts
Maximum	2.0 watts

POWER SUPPLY RATING

A-5	105-125 volts, 50 cycles, 45 watts
A-6	105-125 volts, 60 cycles, 45 watts

VICTROLA MECHANISM

Motor	Manual Starting Synchronous
Turntable Speed	78 r.p.m.
Pickup	Crystal
Impedance	80,000 ohms at 1,000 cycles

Cabinet Dimensions	Height 5 inches	Width 12¼ inches	Depth 10 inches
Chassis Base Dimensions (with speaker)	Height 3 inches	Width 7¾ inches	Depth 5¼ inches
Weight (Shipping)	8 pounds	Weight (Net)	6 pounds

General Description and Service Data

The model R-89 Electric Victrola consists of a crystal pickup, a three tube audio amplifier, a dynamic speaker, and motor turntable mechanism in a table type walnut veneer cabinet. Any record, up to and including the 12-inch size, may be played on this instrument.

The crystal pickup unit is securely sealed in a metal casing against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair it, but a new replacement crystal unit should be installed.

This instrument may also be used to play records through a radio receiver, if so desired. To do this remove shielded lead at rear of cabinet from pickup jack, and plug into shorting jack, and plug lead from radio receiver into pickup jack. Methods of connecting mechanism to various receivers, are shown on next page.

Phonograph Motor

The synchronous motor used in this instrument is designed to be simple and foolproof. The parts that may require attention are plainly shown. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. Stator should be free to rotate between limits of damping assembly.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

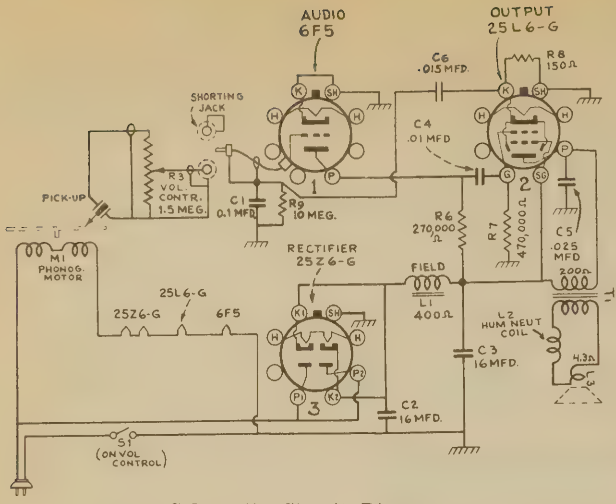
Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Do not remove Turntable while set is turned on, as damage to tubes will result.

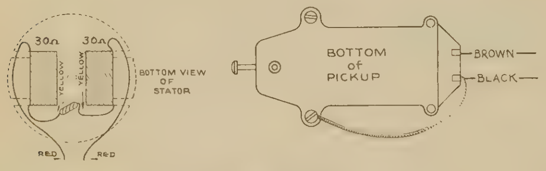
Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

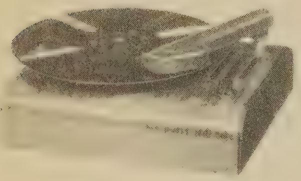
STOCK No.	DESCRIPTION	
	AMPLIFIER ASSEMBLIES	
31886	Cable—Shielded amplifier input cable complete with plug	
14393	Capacitor—.01 mfd. (C4)	
11315	Capacitor—.015 mfd. (C6)	
30899	Capacitor—0.1 mfd. (C1)	
31323	Capacitor—16 mfd. (C2, C3)	
13428	Resistor—150 ohms, ¼ watt (R8)	
12199	Resistor—270,000 ohms, ¼ watt (R6)	
12285	Resistor—470,000 ohms, ¼ watt (R7)	
31319	Socket—Tube socket	
	PICKUP AND ARM ASSEMBLIES	
31888	Base—Pickup arm base and pivot shaft	
31050	Crystal—Pickup crystal and needle screw	
31887	Pickup arm and crystal complete	
31745	Ring—Retaining ring for pickup arm base	
12539	Screw—Pickup needle screw	
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly	
31046	Bearing—Bearing assembly	
31041	Cap—Rubber spindle cap	
31047	Cushion—Rubber cushion for bearing	
31924	Motor—60 volt, 50 cycle (M1)	
31923	Motor—60 volt, 60 cycle (M1)	
31040	Mountings—Turntable rubber mountings sufficient for one turntable	
32023	Rotor—Turntable and rotor laminations for 50 cycle motor	
31926	Rotor—Turntable and rotor laminations for 60 cycle motor	
32022	Stator—Stator assembly complete with coils and laminations for 60 volt, for 50 cycle motor	
31925	Stator—Station assembly complete with coils and laminations for 60 volt, for 60 cycle motor	
31039	Turntable—Finished turntable top plate only—less rubber mountings	
14231	Washer—Bearing shim washers	
4083	Washer—Leather washer	
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone and voice coil (L3)	
31201	Speaker Complete	
31203	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31986	Cable—Pickup-to-receiver interconnecting cable required when instrument is used as record player only	
3961	Knob—Volume control knob	
31053	Screw—Motor mounting screws, cushions and nuts, sufficient for one motor	
14278	Socket—Amplifier shorting socket or pickup output socket	
31889	Volume control and switch (R3, S1)	



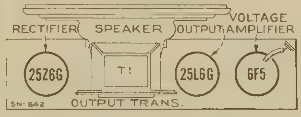
Schematic Circuit Diagram



Wiring Details



R-89



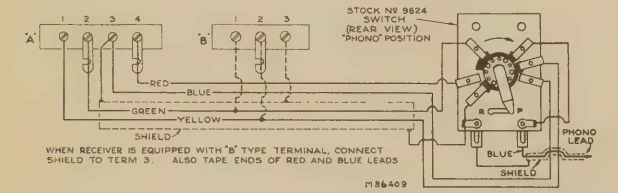
Tube Locations

CONNECTING VICTROLA TO:

1939 RCA RADIO RECEIVERS OF "90" SERIES:

Plug male jack on end of Victrola cable into female receptacle on receiver chassis. Push or turn "Phono" switch to "Phono" position, and operate Victrola according to instructions.

RADIO RECEIVERS HAVING "PHONO" TERMINAL BOARDS.



WHEN RECEIVER IS EQUIPPED WITH "B" TYPE TERMINAL, CONNECT SHIELD TO TERM 3. ALSO TAPE ENDS OF RED AND BLUE LEADS

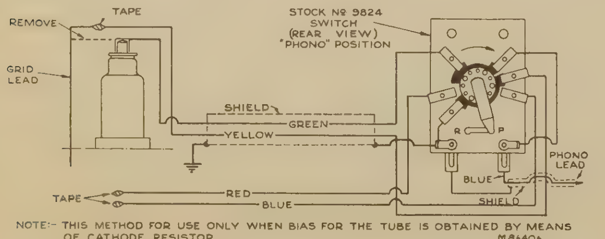
RCA Radio Receivers to which the above illustration applies: 5T1, 5T4, 5T5, 5T6, 5T7, 5T8, 6T5, 8T2, 8T11, 8K11, 85T5, 86E, 86K, 86T, 86T1, 86T4, 86K7, 86T44, 87K, 87T, 87K1, 87K2, 87T2, 88K, 810K, 810K1, 810T, 810T4, 811K, 812K, 813K, 816K, 811T.

For following Receivers, Yellow lead should go on Terminal No. 1, Green lead on Terminal No. 2: 6K2, 6T2, 6K3, 6K10, 6T10, 7T1, 7K1, 85T8, 86T3, 86T2, 86T6, 87T1.

Insulate shield of switch wires from chassis, on following RCA Receivers: 5T, 6T, 6K, 6K1, 7T, 7K, 7X, 7X1, 8T, 8T10, 8K, 8K1, 86X4, 87EY, 87X, 87Y.

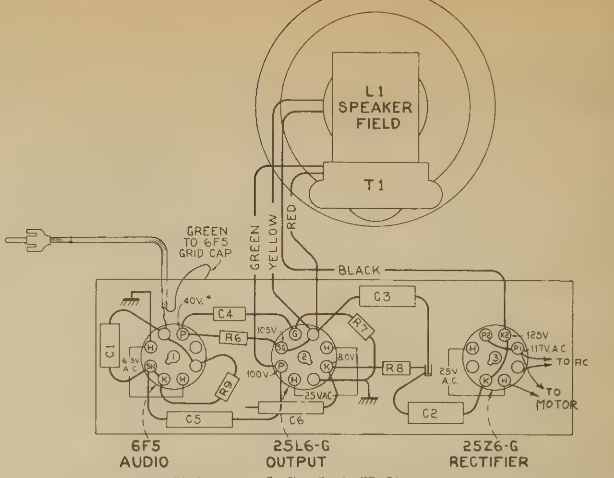
Receivers having a Four Terminal Board: 9K, 9T, 9K1, 9K2, 9K3, 9K10, 10T, 10K, 10K1, 13K, 15K. Reverse Red and Blue leads to Terminal Board of C9-6, T9-9, T8-16, C8-17.

RADIO RECEIVERS WHOSE FIRST AUDIO AMPLIFIER TUBE IS OF THE GRID CAP TYPE.



NOTE:- THIS METHOD FOR USE ONLY WHEN BIAS FOR THE TUBE IS OBTAINED BY MEANS OF CATHODE RESISTOR
M86406

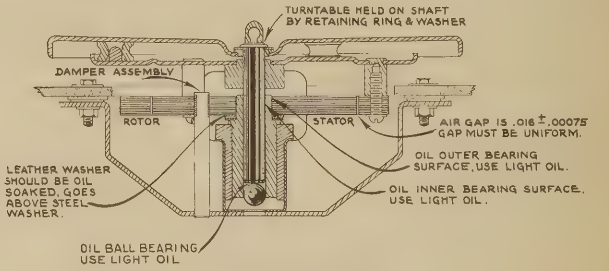
RCA Receivers for which above method applies: 125, 128, 128E, 224E, 225, 226, T6-1, C6-2, T6-9, T7-5, C7-6, T7-12, C7-14, T8-14, C8-15, T8-18, C8-19, C8-20, C9-4, T9-10.



Wiring and Socket Voltages

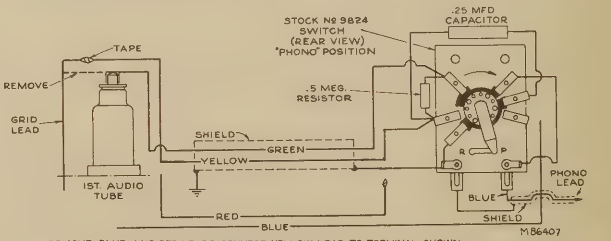
***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated. Values should hold within approximately ± 20% with 117-volt a-c supply.


TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ±.00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE. USE LIGHT OIL.
OIL BALL BEARING USE LIGHT OIL

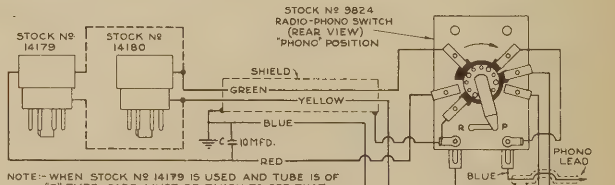
Motor Details

RADIO RECEIVERS WHOSE FIRST AUDIO TUBE IS OF THE GRID CAP TYPE, AND FIXED BIAS FOR TUBE IS OBTAINED THROUGH GRID LEAD.



NOTE:- REMOVE BLUE AND RED LEADS. CONNECT YELLOW LEAD TO TERMINAL SHOWN.

RADIO RECEIVERS USING 6C5 OR 6J5, 6C5G OR 6J5G, TUBE FOR FIRST AUDIO AMPLIFIER.



NOTE:- WHEN STOCK Nº 14179 IS USED AND TUBE IS OF "G" TYPE CARE MUST BE TAKEN TO SEE THAT SHIELD TERMINAL Nº 1 IS GROUNDED ON TUBE SOCKET. WHEN STOCK Nº 14180 IS USED RED LEAD SHOULD BE TAPED, OMIT C.
M86408

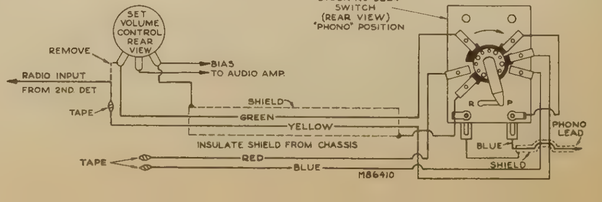
Stock No. 14179 Adaptor opens grid circuit, and inserts 2,700 ohm resistor in cathode of 6C5 or 6J5 tubes, for bias on Phono reproduction.

Stock No. 14180 Adaptor opens grid circuit of 6C5 or 6J5 tube.

Stock No. 14180 Adaptor necessary for RCA: C11-1, C13-2, T10-1, C11-3, C13-3.

Stock No. 14179 Adaptor necessary for RCA: C15-3, C15-4.

RADIO RECEIVERS WHERE RECEIVER VOLUME CONTROL IS TO BE USED TO ALSO CONTROL "PHONO" VOLUME.



RCA Victor

MODEL R-91

Four-Tube, A-C, Electric Victrola (Phono. only)

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 21—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

RCA TUBE COMPLEMENT

(1) RCA-6F5	Audio Voltage Amplifier
(2) RCA-25L6	Audio Power Output
(3) RCA-25Z6	Rectifier
(4) RCA-BK61B	Ballast Tube

POWER SUPPLY RATING

A-5	105-125 volts, 50 cycles, 65 watts
A-6	105-125 volts, 60 cycles, 65 watts

POWER OUTPUT

Undistorted	1.5 watts
Maximum	2.0 watts

LOUDSPEAKER

Type	Electrodynamic
Voice Coil Impedance	4.9 ohms at 400 cycles

MOTOR BOARD

Motor	Manual Starting Synchronous
Turntable Speed	78 r.p.m.

PICKUP

Type	Crystal
Impedance	80,000 ohms at 1,000 cycles

Cabinet Dimensions	Height 9 inches	Width 15-1/18 inches	Depth 13-1/16 inches
Chassis Base Dimensions	Height 1⅛ inches	Width 5⅞ inches	Depth 3⅝ inches
Weight (Shipping)	30 pounds	Weight (Net)	26 pounds
Operating Controls	(1) Right Front, Volume; (2) Right Rear, Power-Tone		

General Description and Service Data

The model R-91 Electric Victrola consists of a crystal pickup, a four tube audio amplifier, a five-inch dust-proof dynamic speaker, and a motor turntable mechanism all combined in a hinged-top, table type walnut veneer cabinet. Any record, up to and including the 12-inch size, may be played on this instrument.

The crystal pickup unit is securely sealed in a metal casing, against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair it, but a new replacement crystal unit should be installed.

Phonograph Motor

The synchronous motor used in this instrument is designed to be simple and foolproof. The parts that may require attention are plainly shown in figure 2. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

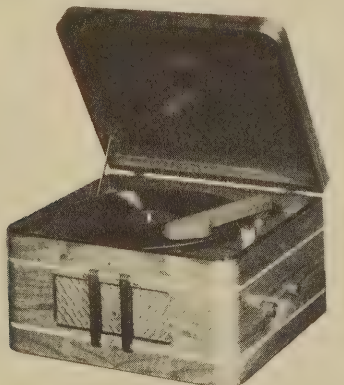
Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. Stator should be free to rotate between limits of damping assembly.

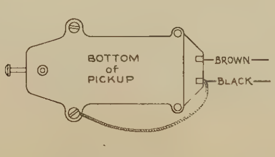
Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Pilot Lamp.—To replace pilot lamp, remove the screws from the small raised block at the front of the motor board, and remove the wooden block. The pilot lamp compartment is then accessible.



Model R-91



Pickup Wiring

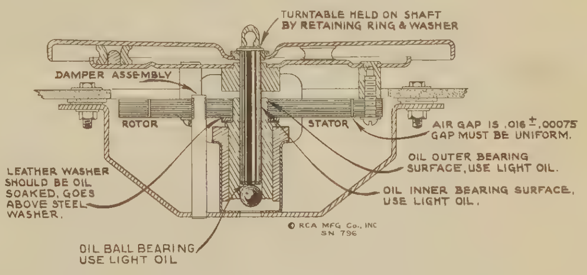

TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL BALL BEARING USE LIGHT OIL
© RCA MFG. Co., INC SN 796

Figure 2—Motor Details

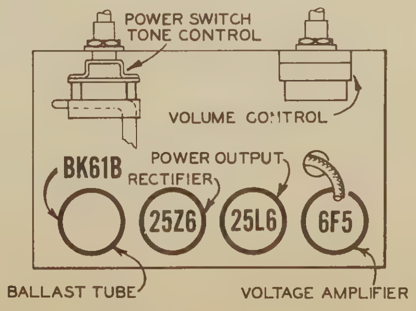


Figure 3—Tube Layout

Trademark "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

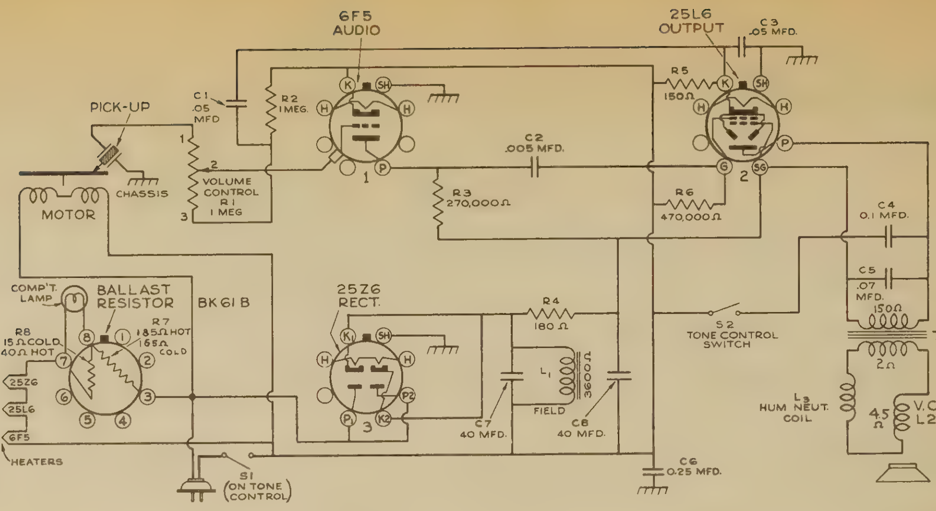
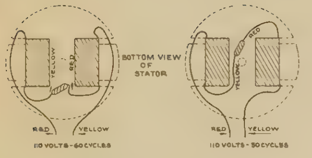
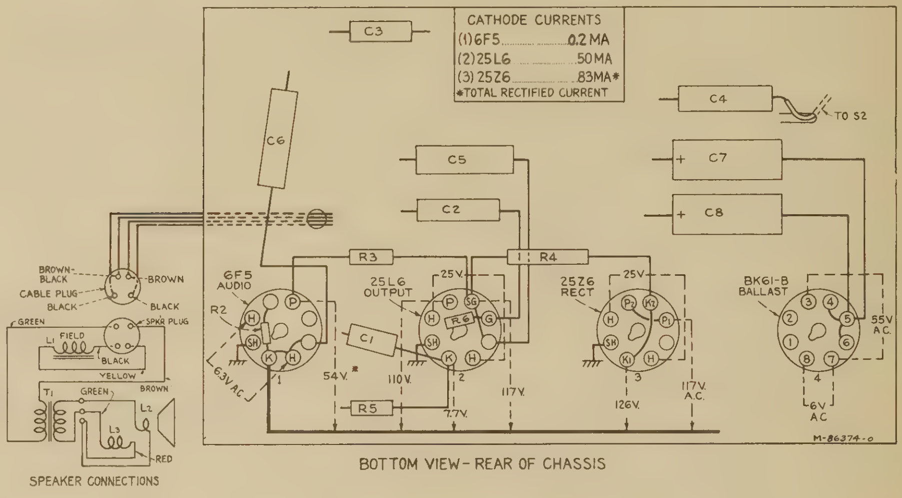


Figure 4
Schematic Diagram



Motor Coil Connections
D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms.

Figure 5
Wiring and Socket Voltages



BOTTOM VIEW - REAR OF CHASSIS

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	AMPLIFIER ASSEMBLIES	
31585	Ballast—Ballast resistor tube — Type BK61-B (R7, R8)................................	
4287	Body—Connector shell for phono. input cable..	
4286	Bushing—Bushing and ferrule for phono. input cable connector..............................	
4838	Capacitor—.005 mfd. (C2)..................	
30882	Capacitor—.05 mfd. (C1, C3)................	
14626	Capacitor—.07 mfd. (C5)..................	
4839	Capacitor—0.1 mfd. (C4)..................	
30965	Capacitor—0.25 mfd. (C6)..................	
31584	Capacitor—40 mfd. (C7, C8)................	
31480	Lamp—Pilot lamp..........................	
30868	Plug—2-contact female plug for motor cable..	
5040	Plug—4-contact male plug for speaker cable...	
31585	Resistor—Ballast resistor tube — Type BK61-B (R7, R8)................................	
30880	Resistor—150 ohms, ½ watt (R5)............	
2736	Resistor—180 ohms, 1 watt (R4)............	
12199	Resistor—270,000 ohms, ¼ watt (R3)........	
12285	Resistor—470,000 ohms, ¼ watt (R6)........	
13730	Resistor—1 meg., ¼ watt (R2)..............	
31365	Socket—Pilot lamp socket..................	
31319	Socket—Radiotron socket...................	
4284	Spring—Tension spring for phono. input cable connector..............................	
31583	Switch—Tone and power switch (S1, S2).....	
31585	Tube—Ballast resistor tube — Type BK61-B (R7, R8)................................	
31582	Volume Control—(R1)......................	
4285	Washer—Insulating washer for phono. input cable connector..........................	
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly..............................	
31046	Bearing—Bearing assembly..................	
31041	Cap—Rubber spindle cap....................	
31047	Cushion—Rubber cushion for bearing.........	
31034	Motor—110 volt, 50 cycle—less mounting (M1)	
9841	Motor—110 volt, 60 cycle—complete with mounting (M1)...............................	
31040	Mountings—Turntable top rubber mountings sufficient for one turntable................	
31037	Rotor—Turntable and rotor lamination assembly —complete for 50 cycle operation..........	
31036	Rotor—Turntable and rotor lamination assembly —complete for 60 cycle operation..........	
31043	Stator—Stator assembly complete with coils and laminations for 50 cycle operation..........	
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation..........	
31039	Turntable—Finished turntable top plate only—less rubber mountings....................	
4083	Washer—Leather washer.....................	
14231	Washer—Metal spacing washer...............	
	PICKUP AND ARM ASSEMBLIES	
31049	Base—Pickup arm pivot shaft and base assembly	
4286	Bushing—Bushing and ferrule insert for connector cap...............................	
4288	Cap—Pickup cable connector cap............	
31050	Crystal—Pickup crystal and needle screw.....	
9842	Pickup Crystal and arm complete with mounting —less connector..........................	
12539	Screw—Pickup needle screw.................	
	SPEAKER ASSEMBLIES (Speaker 84265-2)	
31587	Cone—Speaker cone and voice coil (L2)......	
31586	Speaker—Complete	
31588	Transformer—Output transformer (T1).......	
	MISCELLANEOUS ASSEMBLIES	
13103	Cap—Pilot lamp cap........................	
13085	Hinge—Cabinet lid hinge...................	
30885	Knob—Volume control, or tone control knob..	
31053	Mounting—Complete set of motor mounting screw assemblies...........................	
31054	Mounting—Pickup arm rubber mounting washer and nut...............................	
30870	Plug—2-contact male plug for motor leads....	
12993	Screw—Set screw for knob Stock No. 30885..	
31213	Support—Cabinet lid support...............	

RCA Victor

RECORD PLAYERS

MODELS R-93B and R-93C

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 12—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Introduction

The RCA Victor Record Players, Models R-93B and R-93C, consist of a motor-turntable mechanism and a crystal pickup unit, with a volume control and motor switch. These players may be adapted to the audio amplifier system of practically any type of radio receiver for the reproduction of records.

The two models are electrically and mechanically similar; they differ in that Model R-93B has a molded plastic cabinet, whereas Model R-93C has a veneer wood cabinet.

Electrical Specifications

VOLTAGE RATINGS

A-6	105-125 volts, 60 cycles, 9 watts
A-5	105-125 volts, 50 cycles, 9 watts
B-2	105-125 volts, 25 cycles, 9 watts
C-5	200-250 volts, 50 cycles, 9 watts

MOTOR AND PICKUP

Type of Motor	Synchronous (Manual Starting)
Turntable Speed	78 r.p.m.
Type Pickup	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles
Average Output Voltage	1½ volts at 1,000 cycles with 250,000 ohm load
Volume Control Resistance	250,000 ohms

Mechanical Specifications

	R-93B	R-93C
Height	4⅞ inches	4⅞ inches
Width	11 inches	11⅜ inches
Depth	8½ inches	9⅞ inches
Turntable Diameter	7 inches	7 inches
Weight (net)	6¼ pounds	6½ pounds
Weight (shipping)	8¼ pounds	8½ pounds

General Description

These instruments employ a crystal pickup unit which depends upon torsional vibration to provide the necessary output voltage. The crystal unit is contained in a metal case, securely sealed against extremes of climate. An offset mounting for the pickup head gives an ideal tracking angle between the needle and record grooves.

The motor is a manual starting, synchronous type, designed to operate with good regularity of speed at the standard 78.26 r.p.m. Mechanically, the motor consists of a laminated stator having a large number of salient poles; a laminated rotor with a corresponding number of poles, which is affixed to the turntable; and two field coils, installed on the stator to furnish the energizing magnetic flux. The rotor, stator, and their bearing assembly are mechanically isolated from the turntable, motor mounting, and cabinet by adequate flexible couplings and supports.

A volume control unit is associated with the record player, and its output is terminated in a twisted-pair cord with a pin-plug connector.

Copyright, 1938, RCA Manufacturing Co., Inc.

CONNECTING RECORD PLAYER TO RADIO RECEIVER—In connecting this player to the radio, care must be exercised to connect it at a point where sufficient gain is between it and the speaker to give normal output. Usually two or more stages of audio amplification are required. The radio part must be thoroughly disconnected or "killed" when playing records, else the radio signals will be heard with the record's music. Attention should be given to the possibility of introducing hum and feedback voltage into the radio when connecting the player. A radio-phonograph switch, Stock No. 9824 is recommended for a switching system. Its connections are shown in Figure 1. With it, radio or phonograph may be selected by simply turning the switch.

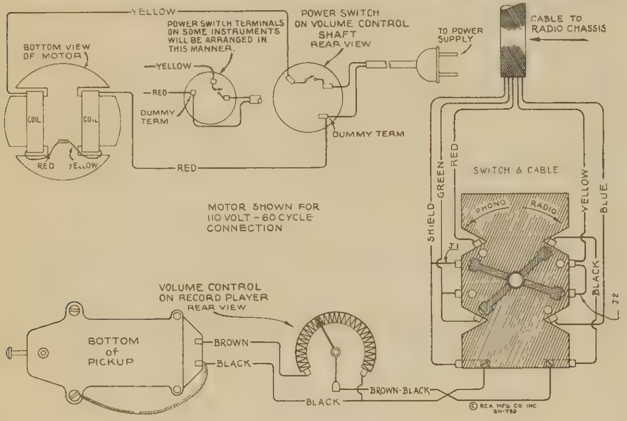
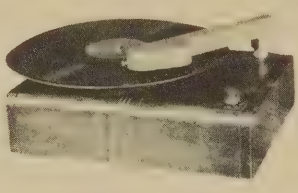
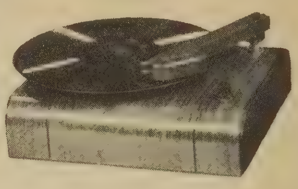


Figure 1—Wiring Diagram

When the radio is equipped with a phonograph terminal board, the player is easily connected. One should follow the instructions pertaining to that particular radio. In general, the player's output should be applied to the grid circuit of the first audio tube in the same manner as the second detector is connected. Use a switching arrangement that grounds the radio as it connects the phonograph.



Model R-93B



Model R-93C

When using the radio phonograph switch Stock No. 9824 on radios using a 6B7 or some similar tube for second detector, the yellow and green leads are connected in series with the grid cap connections of this tube. The green lead is connected to the grid cap.

RECORD PLAYER SWITCH JUMPERS—Some record player switches do not have jumpers J1 and J2 attached. When the switch is so connected and turned to phonograph position, the voltage developed by the pickup is fed into the radio receiver through the green wire and shield, and at the same time the yellow wire is connected to shield. The jumpers J1 and J2 permit the yellow lead to kill radio by connection to shield. The jumpers should be removed where the yellow lead connects in such a position as to short bias batteries, etc. Check the switch to be used for the method chosen and use the jumpers accordingly.

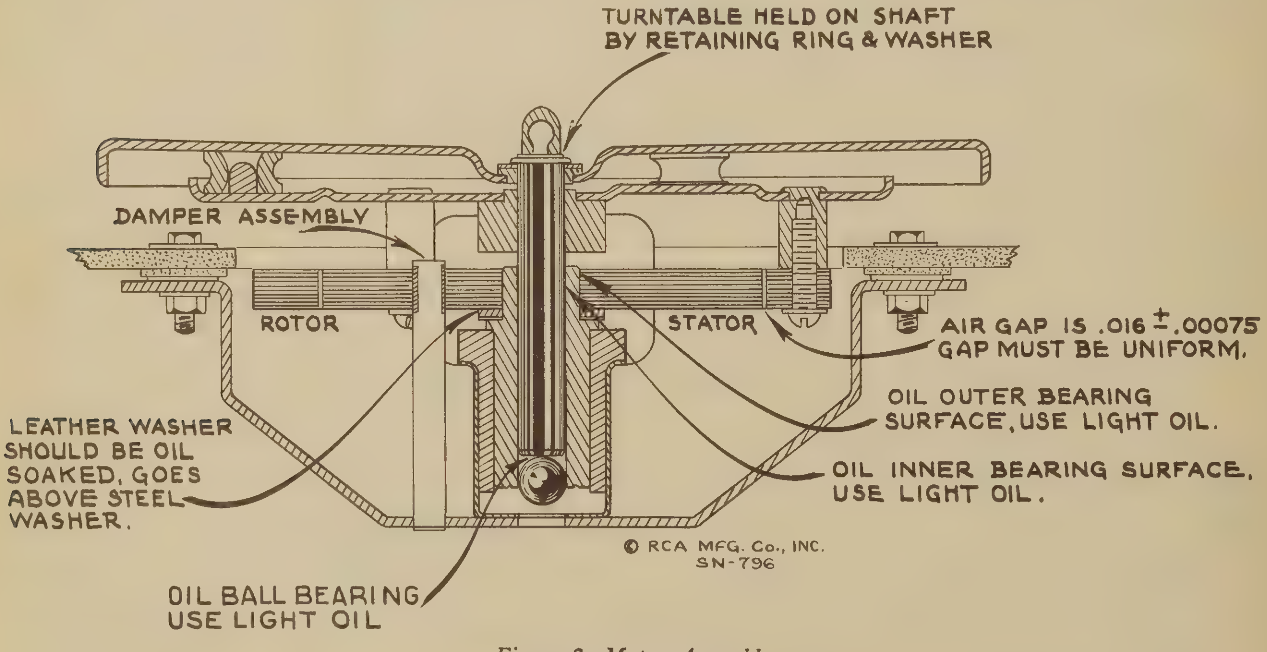

TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ±.00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE. USE LIGHT OIL.
© RCA MFG. Co., INC. SN-796
OIL BALL BEARING USE LIGHT OIL

Figure 2—Motor Assembly

PHONOGRAPH MOTOR SERVICE DATA

The synchronous motor used in this instrument is designed to be simple and foolproof. Among its many features are constancy of speed, low power consumption, single moving part, ease of starting, rubber damper, ease of repair, and long life. The parts that may require attention are plainly shown by Figure 2. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

ROTOR ADJUSTMENT

Use three 16-mil shims, spaced equally around the gap between rotor and stator. When rotor is suitably adjusted, securely tighten the three screws which hold the rotor to the turntable. The centering operation is very similar to that done with a dynamic speaker.

If top of rotor lamination assembly is not flush with top of stator laminations, additional steel washers should be inserted beneath the stator until it is raised to the desired level.

HUM AND VIBRATION

A small amount of hum when starting, decreasing to a negligible amount while running, is normal. If excessive vibration occurs either at starting or running, it may be due to one of the following:

(1) Insufficient lubrication in outer bearing or any other failure that will cause the stator to bind.

(2) Metal washer above the leather washer at the bottom of the main bearing. It must be below.

(3) Leather washer not oiled. When replacing the leather washer, make sure that it is thoroughly soaked in oil.

(4) Motor not properly supported from motor board. Unless the motor is properly supported from the motor board, vibration will be excessive.

(5) Burrs on salient poles of rotor or stator. They should be removed with fine emery cloth.

(6) Avoid placing the record player on top of the radio cabinet since acoustic feedback may tend to accentuate mechanical hum.

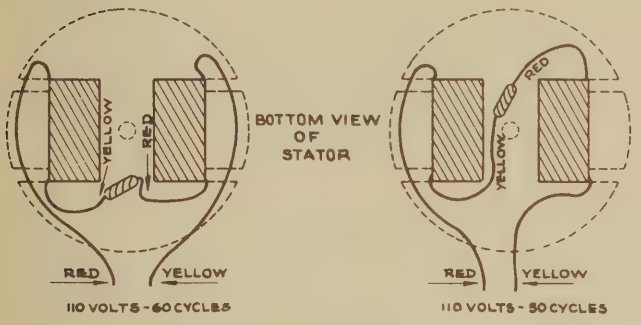


Figure 3—Motor Coil Assembly and Connections

REMOVING THE ROTOR FROM THE STATOR

The rotor and turntable assembly simply rests on the ball bearing at the bottom of the vertical bearing, and may be removed by lifting out. Don't turn player upside down without holding turntable.

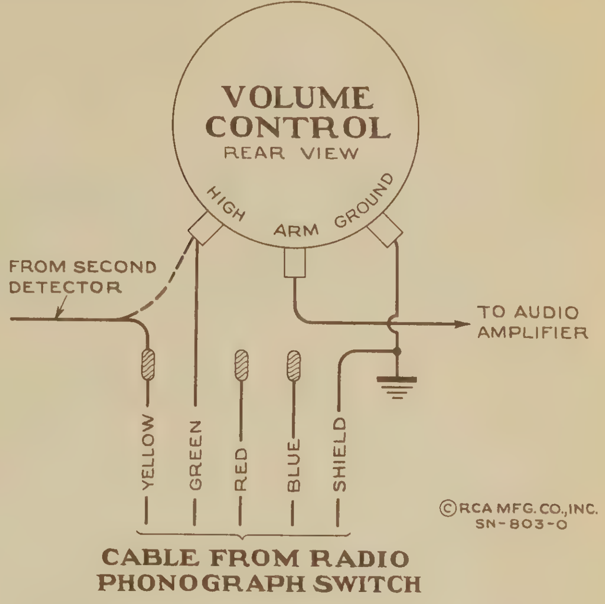


Figure 4—Typical Connections to Radio Receiver Volume Control

LUBRICATION

Both the rotor and stator have bearing surfaces about the center vertical axis. These bearings and the ball bearing at the bottom of the turntable's shaft should be oiled whenever player is serviced. The leather washer beneath the stator is to be pliable and soaked in light oil.

For connection to Radio Receivers, refer to R-94B

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly	
31046	Bearing—Bearing assembly	
31041	Cap—Rubber spindle cap	
31047	Cushion—Rubber cushion for bearing	
31034	Motor—110 volt, 50 cycle—less mounting (M1)	
9841	Motor—110 volt, 60 cycle—complete with mounting (M1)	
31040	Mountings—Turntable top rubber mountings sufficient for one turntable	
31037	Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation	
31036	Rotor—Turntable and rotor lamination assembly complete for 60 cycle operation	
31043	Stator—Stator assembly complete with coils and laminations for 50 cycle operation	
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation	
31039	Turntable—Finished turntable top plate only—less rubber mountings (50-60 cycle only)	
4083	Washer—Leather washer	
14231	Washer—Metal spacing washer	
	PICKUP AND ARM ASSEMBLIES	
31050	Crystal—Pickup crystal and needle screw	
9842	Pickup crystal and arm complete with mounting	
12539	Screw—Pickup needle screw	
	MISCELLANEOUS ASSEMBLIES	
31055	Cabinet—Model R-93B cabinet with bottom cover—less rubber feet	
31051	Foot—Rubber foot for cabinet	
3961	Knob—Volume control knob	
31054	Mounting—Pickup arm mounting nuts, washer, and rubber spacer	
31053	Mounting—Motor mounting screw assembly complete	
31048	Plug—2-contact male plug for output cable	
31052	Volume Control and on-off switch (R1, S1)	

RCA VICTOR PORTABLE VICTROLA
MODEL 0-12

SERVICE DATA

Motor.—The drive motor is of simple design and substantial construction. It should require little or no service if properly maintained. Attention to lubrication of the moving parts and occasional cleaning of the mechanism will go far to prevent faulty operation. Should it become necessary to repair the motor, the following procedure should be applied: **CAUTION.—Allow the motor mechanism to run down completely before attempting adjustment, repairs, or replacements.**

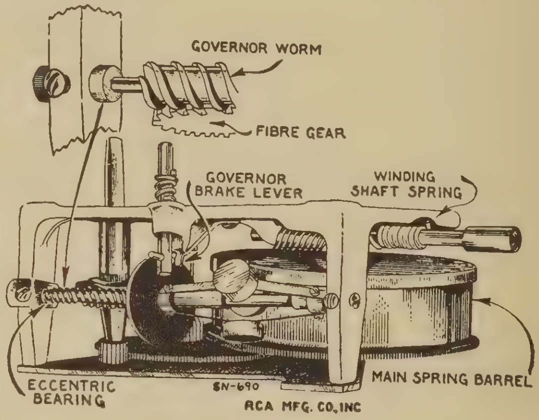
Removing Motor from Cabinet.—Remove the winding key. To dismount the motor, unscrew the spindle cap with a screwdriver and remove turntable, slightly tapping the spindle while exerting an upward lift on the turntable. Remove the seven screws holding the motor board and the two screws holding lid support to cabinet and lift motor board assembly from case. Loosen the screw holding the speed-regulating lever and remove the latter. The three screws holding motor to motor board should then be loosened to permit removal of motor assembly.

Replacing Main Spring Barrel.—In case of main spring failure, the entire spring barrel and gear should be replaced. Remove the spring-barrel spindle screw by **unscrewing to right.** Remove the C washer and two pillar screws holding bottom plate. Remove bottom plate, intermediate spindle shaft, and spring barrel. Reassemble parts in reverse sequence.

Winding Shaft Spring.—This spring functions as a friction ratchet. It may be removed as follows: remove pin holding winding worm on shaft; remove winding shaft; then remove screw holding spring. Replace in reverse sequence.

Governor Adjustments.—The mesh of the worm and fiber gears is adjusted by rotation of the eccentric spindle bearings. The adjustments should be made so that the worm meshes properly with the fiber gear and rotates freely without binding. The bearings should be accurately aligned with each other. The minimum of spindle end-play which permits smooth operation should be used.

Speed Regulator Lever.—After assembly, adjust the speed regulator until the turntable rotates at 78 r. p. m.; loosen the speed regulator screw and set pointer to center of speed indicator scale; tighten screw and recheck turntable speed.



Lubrication.—All moving parts of the motor should be thoroughly cleaned and lubricated every six months to prevent excess wear and to assure proper operation. A small amount of grease should be applied to the worm gear of the governor, the gear of the winding shaft, and on the small pinion gear. All other points, including regulator friction pad, should be lubricated with light oil. All motor parts should be covered with a light film of oil to prevent rusting.

REPLACEMENT PARTS

Stock No.	Description	Stock No.	Description
13849	Arm—Tone arm less sound box	13854	Motor—Spring motor complete
13850	Brake—Turntable brake complete	13865	Screw—Needle holding screw
13845	Cap—Turntable spindle cap	13860	Shaft—Winding key shaft and socket—Less winding gear
13852	Cup—Needle cup	30368	Sound box
13847	Escutcheon—Speed regulator escutcheon	13856	Spindle—Motor spindle and two gears assembled
13855	Gear—Intermediate drive gear and shaft	13851	Spring—Turntable brake spring
13858	Gear—Winding worm gear—Located on winding key shaft	13835	Spring—Mainspring, spring barrel and drive gear
13859	Gear—Winding gear—Located on spring barrel shaft	13873	Turntable—Complete with black cover
13857	Governor—Governor assembly complete	13844	Turntable—Complete with brown cover
13846	Indicator—Speed regulator arm and pointer	14181	Turntable—Complete with blue cover
13861	Key—Winding key	13862	Weight—Governor weight and spring

SERVICE DIVISION

RCA Manufacturing Co., Inc.

CAMDEN, N. J., U. S. A.

—1938 No. 37—
Printed in U. S. A.

RCA Victor

MODEL R-94B
RECORD PLAYER
TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 18—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

MOTOR

Type.................................. Self-starting Induction
Turntable Speed...................... 78 r.p.m. (Adjustable)
Turntable Diameter............................. 10 inches
D-C Resistance.............. 110 volts, 60 cycles, 96.3 ohms; 110 volts, 50-60 cycles, 72.3 ohms

POWER SUPPLY RATING

A-6...................... 105-125 volts, 60 cycles, 25 watts
A-5-6................... 105-125 volts, 50-60 cycles, 25 watts

PICKUP

Type.. Crystal
Impedance...................... 80,000 ohms at 1,000 cycles
Volume Control Resistance.................... 250,000 ohms
Average Output Voltage............. 1½ volts at 1,000 cycles across 250,000 ohm load

CABINET DIMENSIONS

Height.. 7-13/16 inches
Depth.. 12-31/32 inches
Width.. 15¼ inches
Net Weight.................................... 12¾ pounds
Shipping Weight............................... 18 pounds

General Description

The RCA Victor Record Player Model R-94B consists of a self-starting motor turntable mechanism, a crystal pickup, an aurally compensated volume control, and a motor switch. This record player can be adapted to play records through the audio amplifier—loudspeaker system of practically every type of radio receiver. The cabinet is of walnut veneer, and has a hinged lid, which locks in the "open" position—but should be closed while records are being played. Any record up to and including the 12-inch diameter size may be played on this instrument. An automatic switch turns the motor "off" when the end of a record has been reached.

Service Data

The crystal pickup unit is thoroughly sealed in a metal casing, against extreme changes of climate. The offset mounting of the crystal unit in the pickup arm insures ideal tracking between needle and record grooves. If failure occurs due to a defective crystal unit, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed.

The turntable drive is a self-starting, variable-speed, governor-type, induction motor. The motor speed adjusting screw is located under the turntable, which must be removed for speed adjustment. The motor speed should be 78 r.p.m., and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding beyond the edge of the record, and then counting the number of revolutions of the turntable per minute. The motor is designed to be simple and foolproof in operation. Occasionally, however, lubrication and certain adjustments may be required. These are illustrated and explained in figure 1. In addition, an application of oil to the felt pad, which rubs against the governor disc, will insure smooth operation.

The turntable is started by pushing to the rear the motor starting lever, which appears to the right of the turntable. The adjustment on the automatic motor stopping switch should be made so that the switch will snap to the "off" position when the needle in the pickup head is 1¾ inches away from the center of the turntable. The locking screw and details of the switch mechanism are shown in figure 2.

The volume control is of the potentiometer type, tapped to give aural compensation at low volume settings. The output lead from the volume control is a single shielded wire, terminating in a small, male, pin plug. See figure 3. This pin plug fits into the female jack receptacle on most of the RCA Victor 1939 "90" series of radio receivers.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	MOTOR ASSEMBLIES	
11703	Governor—Motor governor complete..........	
30475	Motor—105-125 volts, 50-60 cycle (M50)....	
14800	Motor—105-125 volts, 60 cycle (M50).......	
	PICKUP AND ARM ASSEMBLIES	
31212	Base—Pickup arm pivot shaft, trip lever, and base assembly.........................	
31050	Crystal—Pickup crystal and needle screw......	
31211	Pickup and arm complete—less rubber mounting and nut...........................	
12539	Screw—Pickup needle screw...............	
	MISCELLANEOUS ASSEMBLIES	
14803	Brake—Automatic brake complete...........	
4870	Capacitor—.025 mfd. (C1)................	
11704	Damper—Turntable rubber damper and damper plate	
31051	Foot—Rubber foot for cabinet..............	
13085	Hinge—Lid hinge........................	
3961	Knob—Volume control knob................	
31054	Mounting—Pickup mounting nut, washer, and rubber cushion........................	
14559	Resistor—10,000 ohms, ¼ watt (R2).........	
12264	Resistor—220,000 ohms, ¼ watt (R3)........	
13573	Screw—Motor mounting screws, washers and rubber cushions.........................	
30100	Spring—Tension springs for automatic brake—one long and one short spring............	
31213	Support—Lid support......................	
14804	Switch—Motor switch—located on automatic brake (S1)...........................	
14801	Turntable	
31108	Volume control (R1).....................	
	ACCESSORIES	
9824	Switch and cable assembly—for use with receivers requiring a switch for changing from Phonograph to Radio—complete with mounting screws, washers, and knob..............	
14179	Adapter—Special octal base adapter with grid connection (pin No. 5) split and a 2,700 ohm resistor internally connected from cathode (pin No. 8) to shell (pin No. 1), 3 terminals on side	
14180	Adapter—Special octal base adapter with grid connection (pin No. 5) split, 2 terminals on side	

Connecting Record Player to Radio Receivers

A table giving methods of connecting the Record Player to various types of audio systems is shown in the following text. Also included are the model numbers of the various RCA Victor Receivers to which the particular method shown applies. The data given in the table requires that an RCA Stock No. 9824 "Radio"-"Phono" switch be used for switching from radio to phonograph, as desired. For ease in connecting the "phono" lead to the Stock No. 9824 switch, the male plug on the end of the shielded lead should be removed by unsoldering, or cutting it off.

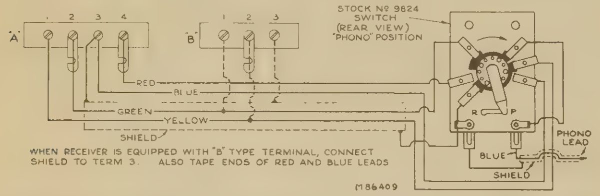
In general, the Record Player must be used with radio receivers having at least two stages of high-gain audio amplification. The Record Player output should be connected to the grid of the first audio tube, and at the same time the output of the radio receiver portion of the chassis should be shorted or opened, to prevent radio signals being heard while the Record Player is in operation.

CONNECTING RECORD PLAYER TO:

1939 RCA RADIO RECEIVERS OF "90" SERIES:

Plug male jack on end of Record Player into female receptacle on receiver chassis. Push or turn "Phono" switch to "Phono" position, and operate Record Player according to instructions.

RADIO RECEIVERS HAVING "PHONO" TERMINAL BOARDS.



WHEN RECEIVER IS EQUIPPED WITH "B" TYPE TERMINAL, CONNECT SHIELD TO TERM 3. ALSO TAPE ENDS OF RED AND BLUE LEADS

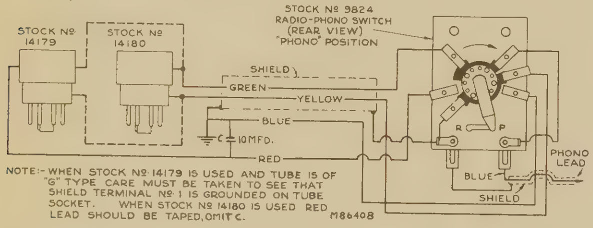
RCA Radio Receivers to which the above illustration applies: 5T1, 5T4, 5T5, 5T6, 5T7, 5T8, 6T5, 8T2, 8T11, 8K11, 85T5, 86E, 86K, 86T, 86T1, 86T4, 86K7, 86T44, 87K, 87T, 87K1, 87K2, 87T2, 88K, 810K, 810K1, 810T, 810T4, 811K, 812K, 813K, 816K, 811T.

For following Receivers, Yellow lead should go on Terminal No. 1, Green lead on Terminal No. 2: 6K2, 6T2, 6K3, 6T10, 7T1, 7K1, 85T8, 86T3, 87T1, 86T2, 86T6, 6K10.

Insulate shield of switch wires from chassis, on following RCA Receivers: 5T, 6T, 6K, 6K1, 7T, 7K, 7X, 8T, 8K, 86X4, 87EY, 87X, 87Y, 8T10, 7X1, 8K1.

Receivers having a Four Terminal Board: 9K, 9T, 9K1, 9K2, 9K3, 9K10, 10T, 10K, 10K1, 13K, 15K. Reverse Red and Blue leads to Terminal Board of C9-6, T9-9, T8-16, C8-17.

RADIO RECEIVERS USING 6C5 OR 6J5, 6C5G OR 6J5G, TUBE FOR FIRST AUDIO AMPLIFIER.



NOTE:- WHEN STOCK Nº 14179 IS USED AND TUBE IS OF "G" TYPE CARE MUST BE TAKEN TO SEE THAT SHIELD TERMINAL Nº 1 IS GROUNDED ON TUBE SOCKET. WHEN STOCK Nº 14180 IS USED RED LEAD SHOULD BE TAPED, OMIT C.

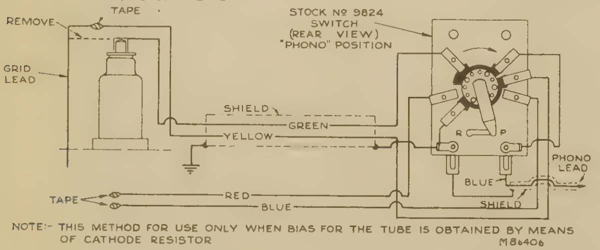
Stock No. 14179 Adaptor opens grid circuit, and inserts 2,700 ohm resistor in cathode of 6C5 or 6J5 tubes, for bias on Phono reproduction.

Stock No. 14180 Adaptor opens grid circuit of 6C5 or 6J5 tube.

Stock No. 14180 Adaptor necessary for RCA: C11-1, C13-2, T10-1, C11-3, C13-3.

Stock No. 14179 Adaptor necessary for RCA: C15-3, C15-4.

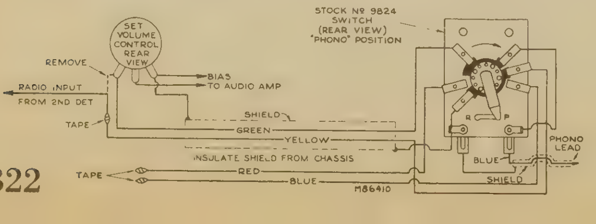
RADIO RECEIVERS WHOSE FIRST AUDIO AMPLIFIER TUBE IS OF THE GRID CAP TYPE.



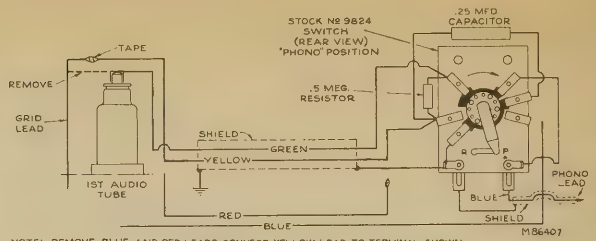
NOTE:- THIS METHOD FOR USE ONLY WHEN BIAS FOR THE TUBE IS OBTAINED BY MEANS OF CATHODE RESISTOR M86406

RCA Receivers for which above method applies: 125, 128, 128E, 224E, 225, 226, T6-1, C6-2, T6-9, T7-5, C7-6, T7-12, C7-14, T8-14, C8-15, T8-18, C8-19, C8-20, C9-4, T9-10.

RADIO RECEIVERS WHERE RECEIVER VOLUME CONTROL IS TO BE USED TO ALSO CONTROL "PHONO" VOLUME.



RADIO RECEIVERS WHOSE FIRST AUDIO TUBE IS OF THE GRID CAP TYPE, AND FIXED BIAS FOR TUBE IS OBTAINED THROUGH GRID LEAD.



NOTE:- REMOVE BLUE AND RED LEADS. CONNECT YELLOW LEAD TO TERMINAL SHOWN.

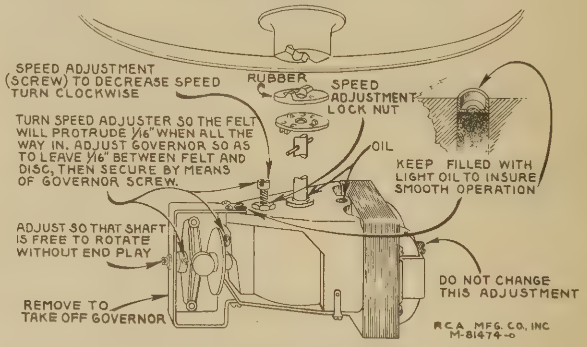

SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
RUBBER
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
RCA MFG. CO, INC
M-81474-0

Figure 1—Motor Adjustments

ADJUST SWITCH TO TRIP WHEN NEEDLE IS ON 1¾" ± 1/32 RAD. FROM ℄ OF MOTOR SPINDLE.

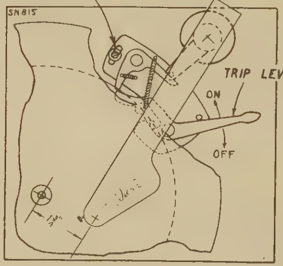


Figure 2—Motor Switch Adjustment

Model R-94B

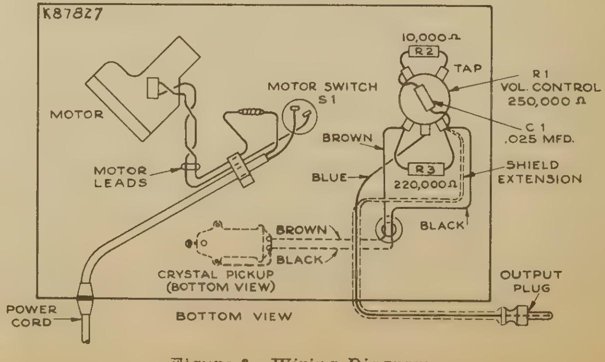


Figure 3—Wiring Diagram

RCA Victor

MODEL VA-20

Two-Tube, A-C, Wireless Record Player

TECHNICAL INFORMATION AND SERVICE DATA

—1938 No. 45—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

Electrical and Mechanical Specifications

Frequency Range .... 530-625 kc

Tube Complement
(1) RCA-6A8 .... Modulator-Oscillator
(2) RCA-25Z6-G .... Half-Wave Rectifier
Dial Lamp .... Mazda 47, 6-8 volts, .15 amp.

Power Supply Ratings
A-6 .... 105-125 volts, 60 cycles, 50 watts
A-5 .... 105-125 volts, 50 cycles, 50 watts

Motor
Type .... Synchronous (Manual Starting)
Turntable Speed .... 78 r.p.m.

Pickup
Type .... Crystal
Pickup Impedance .... 100,000 ohms at 1000 cycles
Average Output Voltage .... 1½ volts at 1000 cycles with 250,000 ohm load.

Cabinet Dimensions
Height .... 3⅜ inches
Width .... 12½ inches
Depth .... 8¼ inches
Over-All Height .... 5 inches
Turntable Diameter .... 7 inches
Weight 7¼ lbs. (net), 9¼ lbs. (shipping)

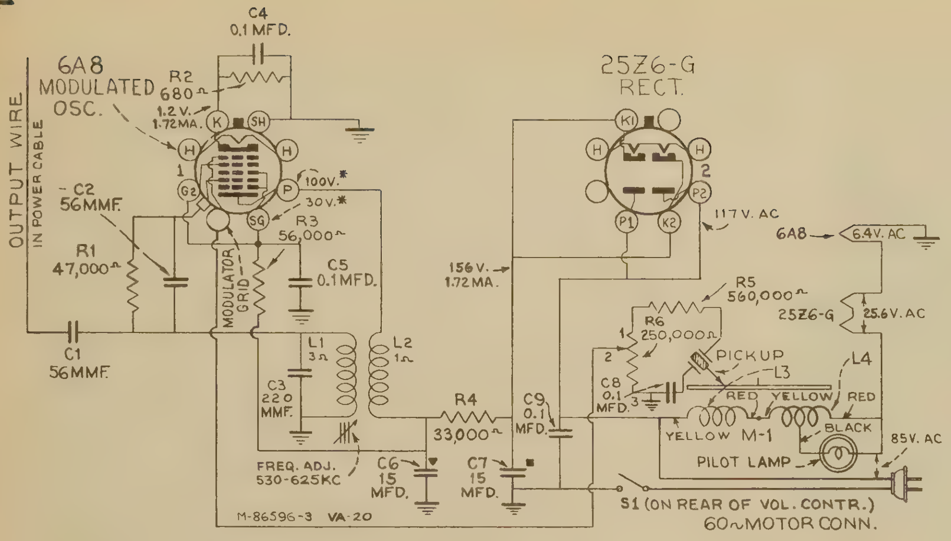
General Description

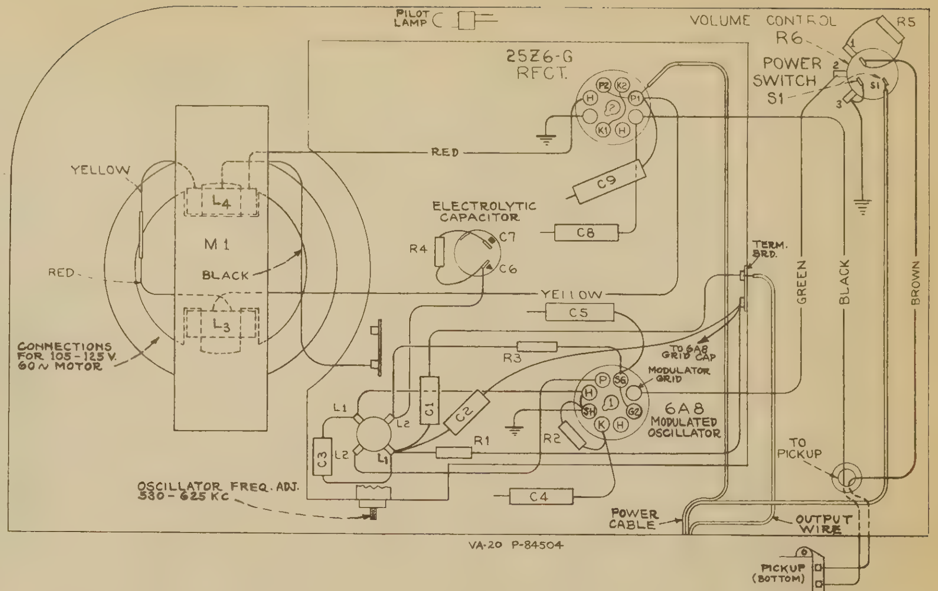
The crystal pickup in Model VA-20 is connected through a volume control to grid No. 1 in an RCA-6A8 tube which functions as a modulated r-f oscillator. The oscillator frequency can be adjusted from 530 to 625 kc by means of a magnetite core in the oscillator transformer, L1-L2. (This is a screwdriver adjustment at the rear of the cabinet.) An output wire is connected to the grid circuit of the oscillator, and is run parallel with the power cable. The output is sufficient to permit operation within approximately 20 feet of a radio receiver.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	MISCELLANEOUS ASSEMBLIES	
13103	Cap—Pilot lamp cap (bullseye)	
32642	Cord—Power and output cord and plug	
31051	Foot—Rubber foot for cabinet	
32611	Knob—Special knob to adjust oscillator coil	
30885	Knob—Volume control and switch knob	
31480	Lamp—Pilot lamp	
31053	Mounting—Motor mounting screws and washers complete	
32500	Mounting—Pickup arm mounting ring and rubber cushion	
12993	Screw—No. 8-32 x ⅜-inch headless set screw for knob	
31365	Socket—Pilot lamp socket	
32499	Volume control and switch (R6, S1)	
	OSCILLATOR ASSEMBLIES	
12723	Capacitor—56 mmfd. (C1, C2)	
12694	Capacitor—220 mmfd. (C3)	
4839	Capacitor—0.1 mfd., 400 V. (C4, C5, C8, C9).	
32152	Capacitor—15 mfd. (C6, C7)	
32501	Coil—Oscillator coil (L1, L2)	
12262	Resistor—680 ohms, ¼ watt (R2)	
12454	Resistor—33,000 ohms, ¼ watt (R4)	
12412	Resistor—47,000 ohms, ¼ watt (R1)	
12286	Resistor—56,000 ohms, ¼ watt (R3)	
12486	Resistor—560,000 ohms, ¼ watt (R5)	
31251	Socket—Tube socket	
	MOTOR ASSEMBLIES	
32507	Base—Motor support, damper, and bearing cup assembly	
31046	Bearing—Bearing assembly	
31041	Cap—Rubber spindle cap	
32645	Coil—Motor field coil for 85-volt, 50-cycle operation—less laminations	
32505	Coil—Motor field coil for 85-volt, 60-cycle operation—less laminations	
31047	Cushion—Rubber cushion for bearing	
32643	Motor—85-volt, 50-cycle (M1)	
32508	Motor—85-volt, 60-cycle (M1)	
31040	Mountings—Turntable top rubber mountings sufficient for one turntable	
32644	Rotor—Turntable plate and rotor lamination assembly complete for 50-cycle operation	
32506	Rotor—Turntable plate and rotor lamination assembly complete for 60-cycle operation	
32917	Stator—Stator laminations and field coils for 85-volt, 50-cycle operation	
32916	Stator—Stator laminations and field coils for 85-volt, 60-cycle operation	
31039	Turntable—Finished turntable top plate only—less rubber mountings	
4083	Washer—Leather washer	
14231	Washer—Metal spacing washer	
	PICKUP AND ARM ASSEMBLIES	
31049	Base—Pickup arm pivot shaft and base assembly	
31050	Crystal—Pickup crystal and needle screw	
9842	Pickup crystal and arm complete with mounting	
12539	Screw—Pickup needle screw	





Set-Up Procedure

1. Insert plug in power supply outlet, and turn the power-switch—volume control knob on top of VA-20 to full clockwise position. Start a record on the VA-20. The motor is a synchronous manual-starting type, and requires a clockwise spin to start.

2. Tune the radio receiving set to a quiet point between 530-625 kc.

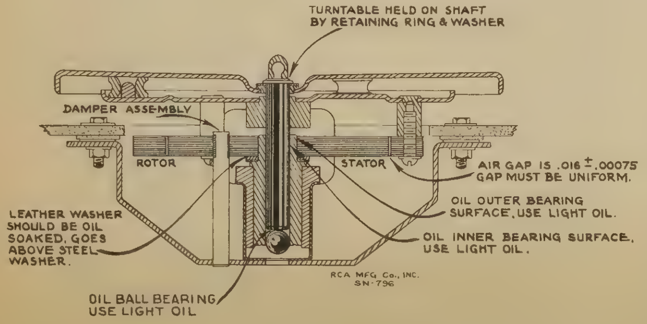
3. Tune the oscillator in the VA-20 to this frequency by adjusting the button on the rear of the VA-20 cabinet to obtain peak output on the receiver. Clockwise rotation decreases the frequency; counter-clockwise rotation increases the frequency.

4. Adjust the radio volume control for the highest volume that is likely to be required, and then use the VA-20 volume control for further adjustment.

5. In noisy locations, it may be desirable to leave the VA-20 volume control turned full clockwise, and regulate the radio volume control for the desired level.

6. If there is insufficient volume, or excessive noise, the remedy is to couple the VA-20 to the radio receiver, by running a piece of insulated wire between the two units: Wrap one end (three or four turns) around the antenna lead-in on the radio, and wrap the other end (three or four turns) around the short wire that projects from the plug on the power cord of the VA-20. With an RCA Master Antenna, wrap the wire around the counter-poise lead where it attaches to the receiver (terminal A3) or to the coupling unit (terminal B).

7. If the radio receiver has push-button tuning, one of the buttons may be set up to tune in the VA-20 oscillator frequency. This button should be marked "Record Player."


TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL BALL BEARING USE LIGHT OIL
RCA MFG. Co., INC. SN-796

Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

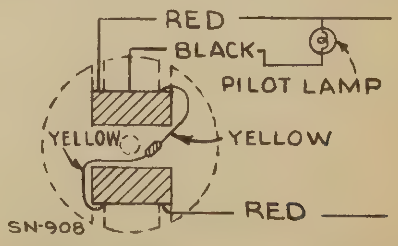
Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

*Note: Voltages with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading. Voltages are measured to chassis, unless otherwise indicated. Values should hold within approximately ± 20% with 117-volt a-c supply.

Precautionary Lead Dress

1. The power supply cord must be dressed between chassis and top of cabinet, away from grid of 6A8, and entirely away from 25Z6-G.
2. All leads to oscillator coil must be as short as possible.
3. All motor leads must be dressed away from rotor.
4. Pickup leads must be dressed away from the top grid of 6A8, and kept away from the 25Z6-G.

Caution: Do not remove turntable from motor while power is turned on, as damage to the tubes will result.



50-Cycle Motor Coil Assembly and Connections
D-C resistance of each coil:

105-125 volts, 60 cycles	36 ohms
105-125 volts, 50 cycles	40 ohms

RCA Victor

MODELS UY-122E and UY-124

Chassis No. RC-352B and RC-352C

Seven-Tube, Three-Band, Electric-Tuning, AC-DC Superheterodyne Victrolas

TECHNICAL INFORMATION AND SERVICE DATA

— 1938 No. 30A —

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.
A Service of the Radio Corporation of America

General Description

The **circuit** of Models UY-122E and UY-124 is the same as Model 97Y, except for the phonograph circuit which is shown at right. For other circuit details, refer to Service Data for Model 97Y.

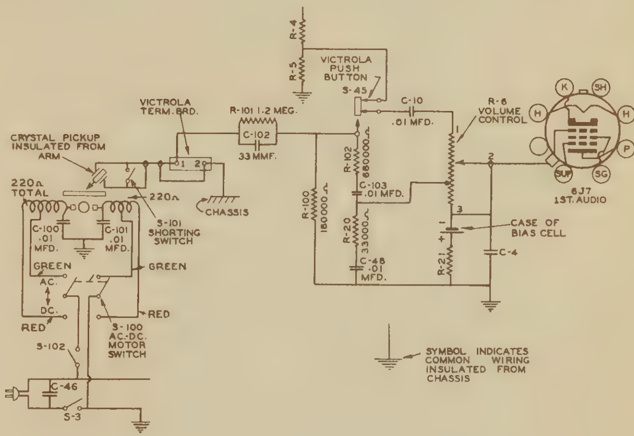
Alignment procedure, adjustments for electric tuning, voltages, and **general service data,** are the same as for Model 97Y.

Replacement parts for Models UY-122E and UY-124 are listed on the following page.

The **phonograph motor** has a switch to permit operation on 105-125 volts d.c., or 105-125 volts, 50-60 cycles a.c. The speed regulator screw should be adjusted for 78 r.p.m.

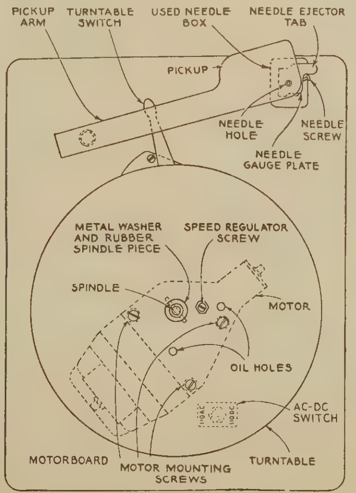
Lubrication should be maintained every six months, applying a few drops of light oil in each oil hole and at the spindle bearing.

The **turntable switch** should trip to the "off" position when the needle is 1¾ inches from the centerline of the turntable spindle.

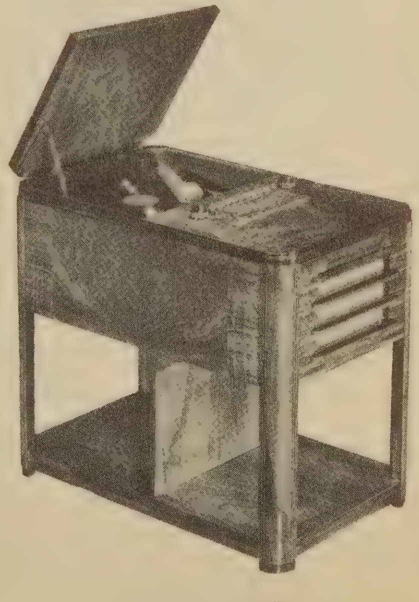


Phonograph Circuit, Models UY-122E, UY-124.

Model UY-124.



Motorboard Details.



Model UY-122E.

First Edition

Trademark "Victrola" Reg. U.S. Pat. Off. by RCA Mfg. Co., Inc.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	RECEIVER ASSEMBLIES	
30284	Ballast—Ballast resistor tube (R22, R23)	
31767	Board—Antenna-ground terminal board	
31579	Board—Phonograph terminal board	
14338	Bushing—Variable condenser mounting bushing and screws	
31400	Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25)	
14079	Capacitor—6.8 mmfd. (C1)	
31387	Capacitor—Antenna coil trimmer capacitor bank—20-470 mmfd. (C31, C32, C33, C34, C35, C36)	
12948	Capacitor—33 mmfd. (C3, C102)	
12725	Capacitor—150 mmfd. (C49)	
13003	Capacitor—180 mmfd. (C37)	
30433	Capacitor—470 mmfd. (C2)	
31381	Capacitor—620 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
4881	Capacitor—3,300 mmfd. (C22)	
12897	Capacitor—4,700 mmfd. (C47)	
31405	Capacitor—6,000 mmfd. (C27)	
4838	Capacitor—.005 mfd. (C14, C43)	
14393	Capacitor—.01 mfd. (C10, C48, C103)	
11315	Capacitor—.015 mfd. (C12, C17)	
4886	Capacitor—.05 mfd. (C13, C20, C44)	
4839	Capacitor—0.1 mfd. (C38, C46)	
12484	Capacitor—0.25 mfd. (C4, C45)	
31576	Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19)	
31584	Capacitor—40 mfd. (C16)	
30904	Capacitor—100 mfd. (C5, C6, C7, C8)	
31581	Cell—Bias cell	
31382	Clip—Mounting clip for coils and cores on oscillator bank	
31402	Coil—Antenna coil (L1, L2, L3)	
31401	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24)	
31385	Coil—Push button oscillator coil (L37, L38)	
31384	Coil—Push button oscillator coil (L39, L40)	
31383	Coil—Push button oscillator coil (L41, L42)	
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	
5119	Connector—3-contact female connector plug for speaker cable	
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	
31374	Cord—Drum drive cord	
31375	Cord—Indicator pointer drive cord	
30905	Core—Adjustable core for I.F. transformer	
31386	Core—Adjustable core and stud assembly for oscillator bank	
31372	Drum—Variable condenser drive cord drum and calibrator	
31580	Holder—Bias cell holder	
31480	Lamp—Dial lamp	
30868	Plug—2-contact female for motor power cable	
31373	Pulley—Drive cord pulley	
5066	Reactor—(L16)	
30284	Resistor—Ballast resistor (R22, R23)	
30880	Resistor—150 ohms, ½ watt (R12)	
30694	Resistor—3,900 ohms, ½ watt (R15)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12738	Resistor—27,000 ohms, ¼ watt (R18)	
12454	Resistor—33,000 ohms, ¼ watt (R2, R20)	
14560	Resistor—100,000 ohms, ¼ watt (R9, R14)	
13698	Resistor—180,000 ohms, ¼ watt (R100)	
12264	Resistor—220,000 ohms, ¼ watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R19)	
14983	Resistor—330,000 ohms, ¼ watt (R8)	
12285	Resistor—470,000 ohms, ¼ watt (R1, R21)	
12413	Resistor—680,000 ohms, ¼ watt (R102)	
30208	Resistor—1.2 meg., ¼ watt (R101)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Drive cord pulley retainer	
14887	Retainer—Retainer for drive cord pulley	
4669	Screw—No. 8-32 square-head set screw for drum, Stock No. 31372	
31368	Shaft—Station selector knob shaft and pulley	
31199	Shield—Dial lamp shield	
12110	Shield—Radiotron shield cap	
31365	Socket—Dial lamp socket	
31251	Socket—Tube socket	
31313	Spring—Tension spring for station selector push button switch latch bar	
31418	Spring—Indicator or drum drive cord tension spring	
31370	Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	
31398	Switch—Range switch (S1, S2)	
30902	Transformer—First i-f transformer (L10, L11, C5, C6)	
30903	Transformer—Second i-f transformer (L12, L13, C7, C8)	
30284	Tube—Ballast resistor tube (R22, R23)	
	MOTOR ASSEMBLIES	
32007	Escutcheon—Motor changeover switch escutcheon	
32033	Field—Motor field coils and laminations	
32034	Governor—Motor governor complete	

STOCK No.	DESCRIPTION	
32006	Motor—105-125 volts, 60 cycles A.C. and 105-125 volts D.C., complete with switch (M1)	
31616	Screw—Motor rotor bearing screw and nut	
31620	Screw—Motor speed regulator screw and nut	
32035	Shaft—Motor turntable spindle shaft and gear	
31823	Switch—D.P.S.T. motor changeover switch (S100)	
31622	Washer—Motor spindle shaft thrust bearing washers (1 metal, 1 felt)	
	MOTOR BOARD ASSEMBLIES	
9848	Cup—Used needle cup and lid complete	
31464	Damper—One rubber spindle cap and one metal damper plate	
31465	Mounting—Pickup arm base mounting—one rubber washer, one lockwasher, one nut	
30870	Plug—2-contact male plug for motor and switch leads	
31158	Screw—Motor mounting screws, washers, and spacers (sufficient for one motor)	
31155	Spring—Used needle cup lid spring	
30100	Spring—Automatic switch springs—one long spring and one short spring	
31466	Switch—Automatic motor switch and switch lever	
31467	Switch—Switch only—for automatic switch (S102)	
31463	Turntable	
	PICKUP AND ARM ASSEMBLIES	
32134	Bushing—Pickup needle insertion guide—mounts on top of crystal cartridge	
31156	Crystal—Pickup crystal cartridge, needle screw and shorting switch, less bushing, Stock No. 32134 (S101)	
32016	Pickup and arm complete	
31160	Screw—Needle screw	
31469	Shaft—Pickup pivot arm and shaft assembly complete with base	
	SPEAKER ASSEMBLIES Model UY124 (Speaker RL 71 A-1)	
31275	Cone—Speaker cone and voice coil (L14)	
5118	Plug—3-contact male plug for speaker	
31798	Speaker—Less output transformer	
14628	Transformer—Output transformer (T1)	
	SPEAKER ASSEMBLIES Model UY122E (Speaker RL 73-5)	
31310	Cone—Speaker cone and voice coil (L14)	
5118	Plug—3-contact male plug for speaker	
31997	Speaker complete	
14628	Transformer—Output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push button	
31456	Cover—8 protective covers for push button markers	
31591	Dial—Station selector dial scale—Model UY124	
31406	Dial—Station selector dial scale—Model UY122E	
31395	Escutcheon—Tuning dial escutcheon only less push buttons and dial scale	
30698	Hinge—Cabinet lid hinge—Model UY124	
31103	Hinge—Cabinet lid hinge—Model UY122E	
31392	Indicator—Indicator pointer, carriage, and clip	
31355	Knob—Range switch knob	
14359	Knob—Station selector knob	
31391	Knob—Tone control knob	
30773	Knob—Volume control knob	
31458	Marker—"Dial Tuning" marker for push button—Model UY122E	
31460	Marker—"Dial Tuning" marker for push button—Model UY124	
31457	Marker—"Record Player" marker for push button—Model UY122E	
31459	Marker—"Record Player" marker for push button—Model UY124	
31589	Marker—Station call letter markers—Model UY122E	
31590	Marker—Station call letter markers—Model UY124	
31393	Screen—Dial color screen	
11210	Screw—Chassis mounting screws, washers, and lockwashers—Model UY124	
31471	Screw—Chassis mounting screws, washers, and lockwashers—Model UY122E	
31470	Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 required)	
4982	Spring—Retaining spring for knob, Stock No. 14359	
14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355	
30330	Spring—Retaining spring for knob, Stock No. 31391	
30946	Support—Cabinet lid support—Model UY122E	
11831	Support—Cabinet lid support—Model UY124	

RCA Victor

MODEL TRK-5 and MODEL TT-5

Chassis Nos. KC-3A, RC-429, RS-89A. Chassis No. KC-3

Seventeen-Tube, AC, Superheterodyne, Five-Television-Channel Receiver with Eight-Tube, Three-Band, AC, Superheterodyne, Broadcast Receiver AND Seventeen-Tube, AC, Superheterodyne, Five-Television-Channel Table Model Attachment

TECHNICAL INFORMATION AND SERVICE DATA

—1939 No. 19—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

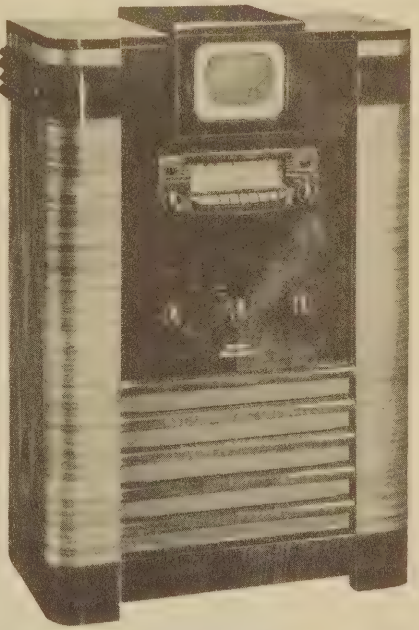
General Specifications

Model TRK-5

Height	44 inches
Width	29½ inches
Depth (overall)	19½ inches
Net Weight	117 pounds
Shipping Weight	186 pounds

Power Supply Rating

105-125 Volts, 60 Cycles.............. 275 watts (total)



Model TT-5

Height	16¼ inches
Width	19½ inches
Depth (overall)	19½ inches
Net Weight	57 pounds
Shipping Weight	73 pounds

Power Supply Rating

105-125 Volts, 60 Cycles.............. 190 watts

General Description

Model TRK-5 consists of a console-type, seventeen-tube, direct-viewing, five-channel, Television receiver; and an eight-tube, three-band, broadcast radio receiver enclosed in a modern styled cabinet. Features of the Television Receiver include: Five-inch Kinescope; Styrol (humidity-resisting) i-f and r-f transformer forms; single-station-selector switch; temperature compensated condensers; iron core i-f and r-f tuning; double safety switch protection; safety glass viewing window; automatic brightness control; and automatic volume control.

Model TT-5 is a seventeen-tube, direct-viewing, five-channel, table model. Television receiver (picture only), which may be easily connected to any modern broadcast radio receiver for the accompanying sound reproduction. Television features for the Model TT-5 receiver are the same as in the Model TRK-5.

Trademark "Magic Eye," "Kinescope," "Victrola" Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

TELEVISION RECEIVER

Mechanical and Electrical Specifications

Tube Complement

In KC-3A (TRK-5) and KC-3 (TT-5) Television chassis.

(1) RCA-1852
(2) RCA-6J5
(3) RCA-1853
(4) RCA-1852
(5) RCA-1852
(6) RCA-6H6
(7) RCA-6V6
(9) RCA-1853
(10) RCA-6B8
(11) RCA-6N7
(12) RCA-6N7
(13) RCA-6N7
(14) RCA-6N7
(15) RCA-6F8-G
(16) RCA-5U4-G
(17) RCA-879
(8) RCA-1802-P4 .... Kinescope

TELEVISION CHANNELS (Selector Switch Positions)

1	84 to 90 mc.
2	78 to 84 mc.
3	66 to 72 mc.
4	50 to 56 mc.
5	44 to 50 mc

Over-all Band Width (approx.)	2.5 mc.
Scanning	Interlaced, 441 Line
Horizontal (Line) Scanning Frequency (Sawtooh Wave)	13,230 cps.
Vertical (Field) Scanning Frequency (Sawtooth Wave)	60 cps.
Frame Frequency	30 cps.
Picture Size (approximate mask dimensions)	3⅜ x 4⅜ in.
Chassis Base Dimensions	13 x 18 in. Max.; height 9 in.

IMPORTANT PRECAUTIONS

CAUTION: These instruments contain high voltage (3,000 volts). Interlock switches are provided for high voltage protection. Do not attempt to service these instruments until you have studied these Service Notes thoroughly, and are familiar with the precautions necessary when servicing these instruments.

Do not attempt to measure the high voltage (2,000 volts). ALWAYS replace the red can over the 879 high voltage rectifier. The most dangerous portion of the H.V. supply is the plate lead of the 879 tube.

Do not eliminate the protection afforded by the interlock switches or measure any voltages on the video chassis unless the gray secondary plate lead of the high voltage transformer has been unsoldered, a rubber tube Stock No. 34096 slipped over the lead, and taped to the lead.

Use only one hand when working on the high voltage portion of the chassis, and always connect a shorting lead first to ground, then to the high side of the first high voltage filter capacitor.

Always wear gloves and goggles when handling Kinescopes.

A good ground should be connected to the receiver at all times.

Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than an ordinary receiving tube.

The large end of the Kinescope bulb—particularly that part at the rim of the viewing surface—must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or shield smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

CAUTION: Do not open the shipping carton, install or handle the Kinescope in any manner unless shatter-proof goggles and heavy gloves are worn. People not so equipped should be kept away while handling Kinescopes. Keep Kinescope away from body when handling.

Notes

1. Detailed explanation of the receiver' circuit operation may be found in the booklet: **Practical Television by RCA.**
2. **Alignment.**—Because of the special equipment and procedure necessary for the proper alignment of these receivers, the alignment will be covered in a supplementary booklet.
3. Instructions for connecting Model TT-5 Attachment to Broadcast Receivers have already been published.

Operation Model TRK-5

The power-volume control on the broadcast radio receiver turns on the power for the complete receiver. Pushing the button marked "Television" on the push button panel turns on the Television receiver, if the above power control is "On." The volume control of the broadcast receiver also controls the Television sound volume level.

Station Selector and Fine Tuning.—The outer ring **"O"** section of the central dual control knob on the Television panel selects the station from which it is desired to receive television transmission.

Five television channels are covered as follows:

(1) 84 to 90 M.C.
(2) 78 to 84 M.C.
(3) 66 to 72 M.C.
(4) 50 to 56 M.C.
(5) 44 to 50 M.C.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television Broadcasts.

The inner section **"I"** of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals. A slight pressure must be exerted on the knob while turning.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

Contrast and Brightness Controls.—The inner "I" section of the "Contrast"-"Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too little contrast makes the picture all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Operating Instructions for this receiver.

The outer ring **"O"** is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Operating Instructions for this receiver.

Hold Controls.—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a **"I"** is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See Operating Instructions for this receiver.

The outer ring section designated by **"O"** is the Vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An accasional resetting may be necessary due to changing to a different station, and to the gradual ageing of the tubes.

Focus Control.—This control is located on the rear of the Video chassis, and controls the electron beam focus of the Kinescope. Ordinarily, after once being focused the Kinescope should not require re-focusing for a considerable length of time.

Operation Model TT-5

The operation of Model TT-5 is the same as that for the Model TRK-5 except that there is a separate "ON-OFF" switch, and a separate sound volume control because the broadcast radio receiver is not included in this model. When Model TT-5 is connected to a broadcast receiver for the Television sound reproduction, the broadcast receiver volume control should be turned to maximum and the Television sound volume controlled with the control on the Television Receiver.

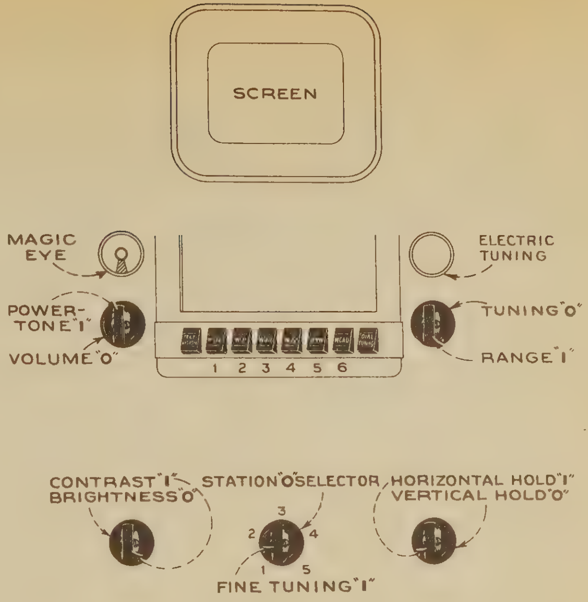


Figure 1—Control Panel Model-TRK-5

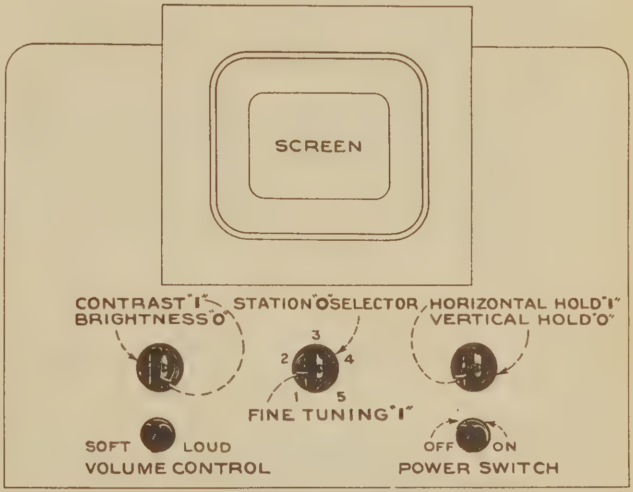


Figure 2—Control Panel Model TT-5

SERVICE DATA

Kinescope Installation Models TRK-5, TT-5: Refer to figure 3.

1. Remove back cover from cabinet.
2. Remove Kinescope mounting shield from shipping carton.
3. Using gloves and goggles remove Kinescope from shipping carton and place in the cone-shaped mounting shield.
4. Guide the Kinescope and mounting shield carefully into the cabinet, placing the Kinescope firmly up against the mask and viewing window. Fasten the mounting shield firmly in place with the thumb screw provided, so that it holds the Kinescope firmly against the mask. If the Kinescope does not line up properly with the mask, loosen the screws "A" and nut "B" and adjust in the direction desired.
5. After the receiver is operating, the Kinescope may be rotated to properly square up the picture with the mask.

CAUTION: When rotating tube the power should be turned "OFF."

Adjustments.—There are a series of screwdriver slot adjustments at the rear of the Video chassis used to obtain the proper picture size and centering. These adjustments are explained fully in the receiver operating instructions, and also in the booklet: **Practical Television by RCA.**

When the receiver is moved from one location to another, some readjustment of these controls may be necessary.

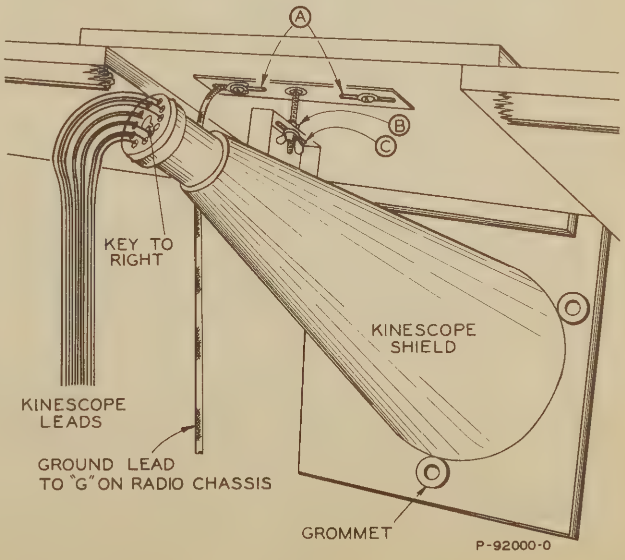


Figure 3—Kinescope Installation

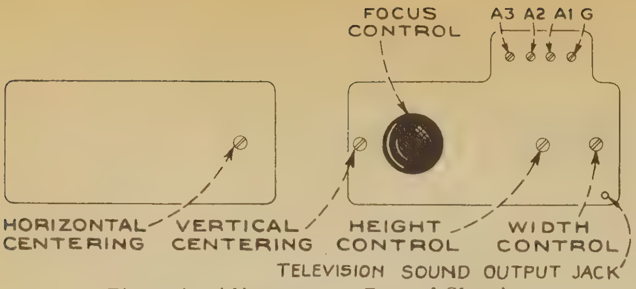


Figure 4—Adjustments at Rear of Chassis

Video Chassis KC-3 (TT-5) KC-3A (TRK-5)

No attempt should ever be made to measure the high (2,000 volts) voltage, because of the dangers and difficulties involved. If at any time it becomes necessary to service the high voltage circuit, the suspected parts should be replaced by parts known to be in good operating condition.

Always replace the red can over the 879 high voltage rectifier.

The most dangerous portion of the receiver is the plate (top cap) lead for the 879 high voltage rectifier. Always be **very** careful when working near or with this lead.

When working on the high voltage supply portion of this chassis, the following precautions should be observed:

1. Remove power supply cord from the power supply socket.
2. Use only one hand at a time.
3. Connect a shorting lead between ground (firstly) and to the high voltage side.
4. Whenever working with the oil-filled high voltage filter capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.
5. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

When any changes are made on the Video portion of the chassis, the locations of leads and parts should be returned as closely as possible to their original positions.

Service Hints:

1. In some cases the horizontal sweep oscillator circuit will radiate energy to nearby broadcast receiving antennas and lead-ins, causing interference with standard broadcast receivers. It has been found that this trouble has been cleared up in some cases by use of an RCA "Magic Wave" antenna for the broadcast receiver receiving the interference.

2. If the picture "tears out" when the receiver is jarred it may be due to microphonic 1852, 1853, or 6J5 tubes.

3. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the motion may cause the 80.5 mmf capacitor C16 to break off.

4. The coils or straps in the h.f. oscillator circuits **should not be touched or moved** or the alignment of the receiver will be disturbed.

6. The two Video coupling capacitors C44, 45, should be kept clear of chassis.

7. In some cases the metal Kinescope mounting shield may become magnetized by the earth's or some nearby magnetic field, and thus distort the picture on the screen towards the magnetized portion of the shield. The shield can be demagnetized by passing it slowly through a solenoid which is energized by an a-c current.

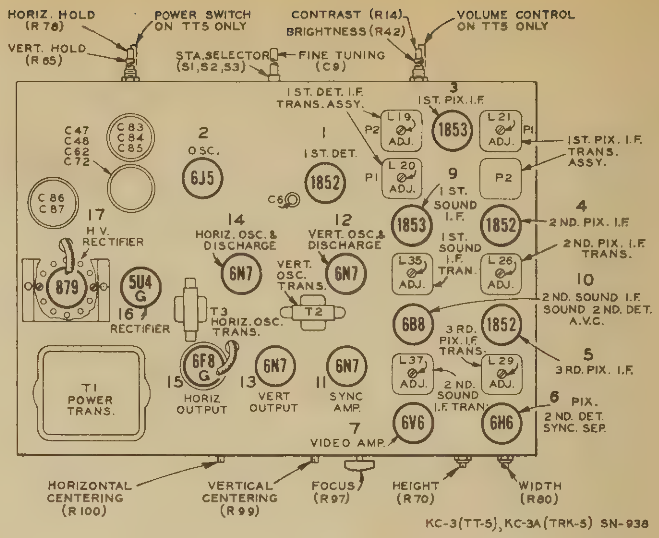


Figure 5—Top View Television Chassis

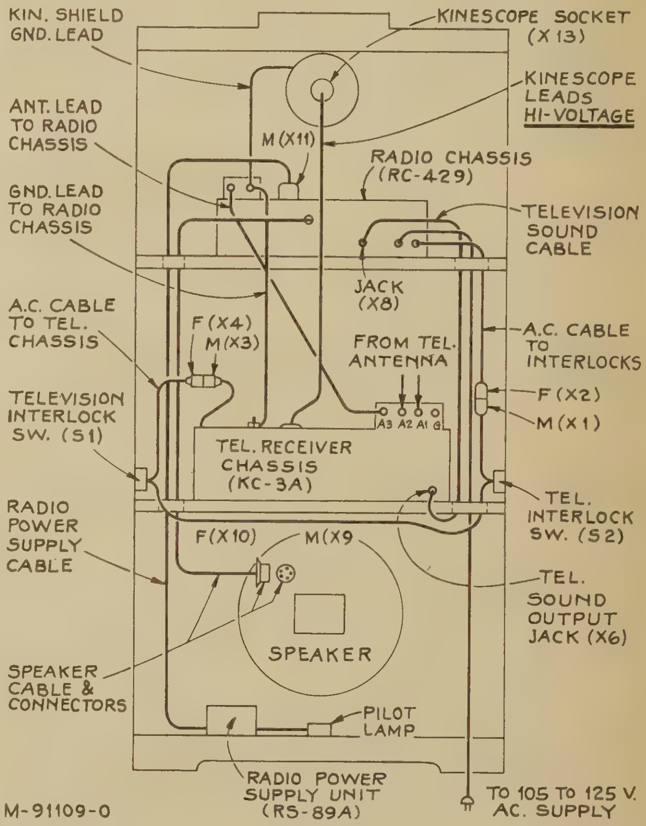

KIN. SHIELD GND. LEAD
KINESCOPE SOCKET (X 13)
KINESCOPE LEADS HI-VOLTAGE
ANT. LEAD TO RADIO CHASSIS
M (X11)
RADIO CHASSIS (RC-429)
GND. LEAD TO RADIO CHASSIS
TELEVISION SOUND CABLE
JACK (X8)
A.C. CABLE TO TEL. CHASSIS
F (X4)
M (X3)
FROM TEL. ANTENNA
A.C. CABLE TO INTERLOCKS
F (X2)
M (X1)
TELEVISION INTERLOCK SW. (S1)
A3 A2 A1 G
TEL. RECEIVER CHASSIS (KC-3A)
TEL. INTERLOCK SW. (S2)
RADIO POWER SUPPLY CABLE
F (X10)
M (X9
TEL. SOUND OUTPUT JACK (X6)
SPEAKER
SPEAKER CABLE & CONNECTORS
PILOT LAMP
RADIO POWER SUPPLY UNIT (RS-89A)
TO 105 TO 125 V. AC. SUPPLY
M-91109-0

Figure 6—Rear View Model TRK-5

Antenna

The finest television receiver built may be said to be only as good as the antenna design and installation. It is therefore important to use a correctly designed antenna, and use care in its installation.

The RCA Double Dipole Antenna, Stock No. 9871, is recommended for use with these receivers. Both this antenna and the "V" antenna described below are especially designed for a sufficient broad frequency response to cover the contemplated television spectrum with good efficiency and are therefore superior to a single Dipole type antenna.

When greater signal pickup, or where a shielding effect from noise pickup or image reflections are desired, a reflector assembly Stock No. 9872 may be added to the Stock No. 9871 Antenna to obtain an improved signal-to-noise ratio.

The RCA Double "V" Wire type Television Antenna is alternative type of antenna designed for television sight and sound reception. Two points of support are necessary. It serves adequately in suburban areas but may not be sufficiently flexible and efficient for congested city areas where bad reflections and interference are encountered.

Antenna Installation:

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television Receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception. Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals and doctors' offices, and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference which spoils the picture.

In mounting any antenna, care must be taken to keep the antenna rods or pickup wires proper at least ¼ wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects.

Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

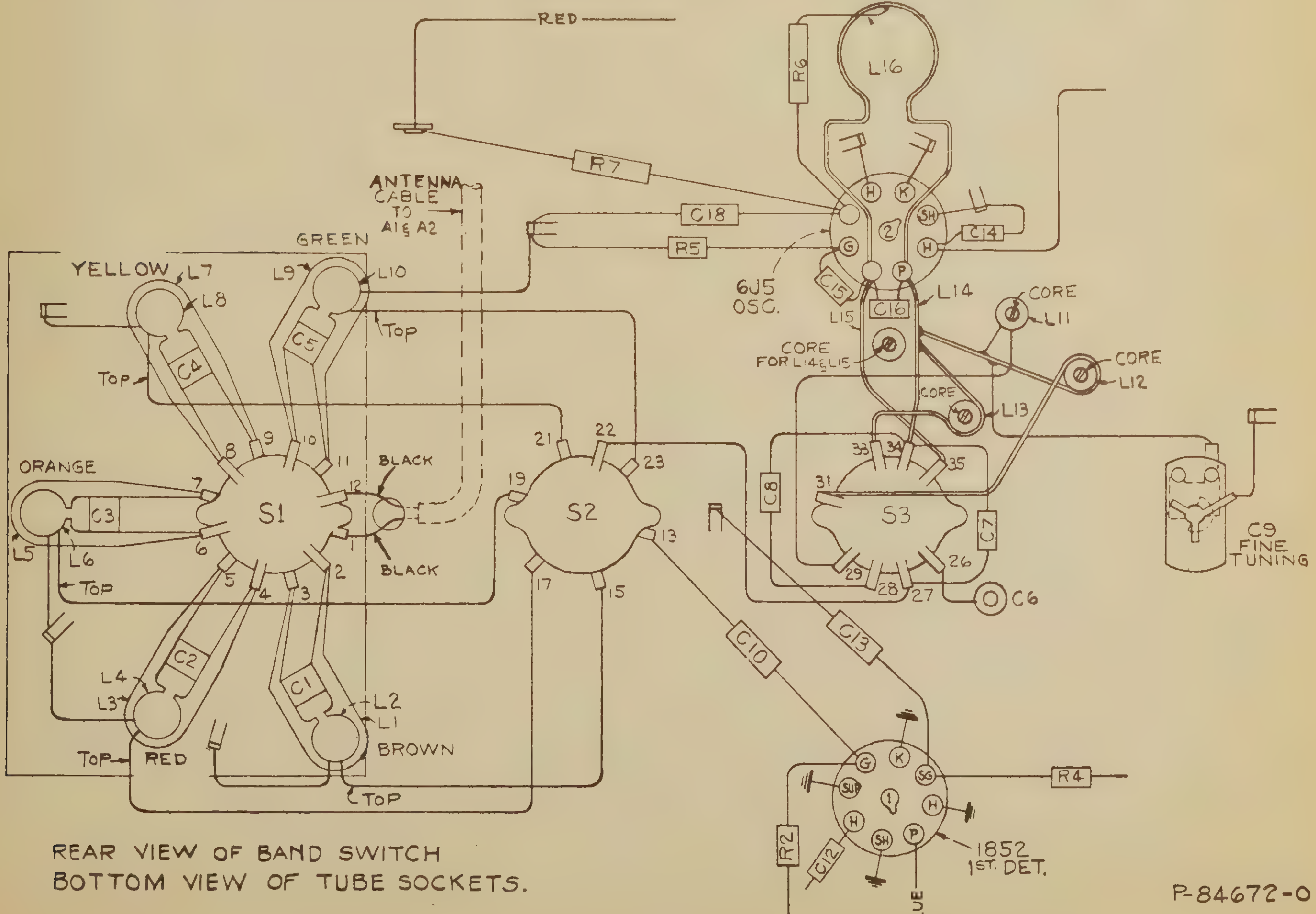
(3) It must be continually remembered that the discernment of the eye is much more critical than that of the ear.

For further information on antennas and antenna installation see RCA Booklet entitled: "Practical Television by RCA" as well as the specific instructions accompanying the RCA Television antennas.

The Transmission Line

RCA Victor has made available two types of exterior transmission lines. One is a special low loss weather-proofed line having the correct surge impedance to match the RCA Victor Television antennas and the RCA Victor Television receivers. It is carried as Stock No. 9882 in 1,000 foot rolls. The second type is a standard weather-proofed line also having the correct surge impedance for proper antenna and receiver matching. It is carried as Stock No. 12430 in 90 ft. rolls, Stock No. 12429 in 40 ft. rolls and is available in 1,000 ft. spools as Stock No. 9881. Use of improper lines may result in excessive loss or may lead to line reflections, resulting in multiple images or "ghosts," thus marring the reception.

For transmission line runs up to 200 feet, and where the signal strength on the antenna is relatively high, the Stock No. 12430, or Stock No. 12429 transmission line may be used. For all other applications the Stock No. 9882 transmission line is recommended.



R. F. Unit Wiring

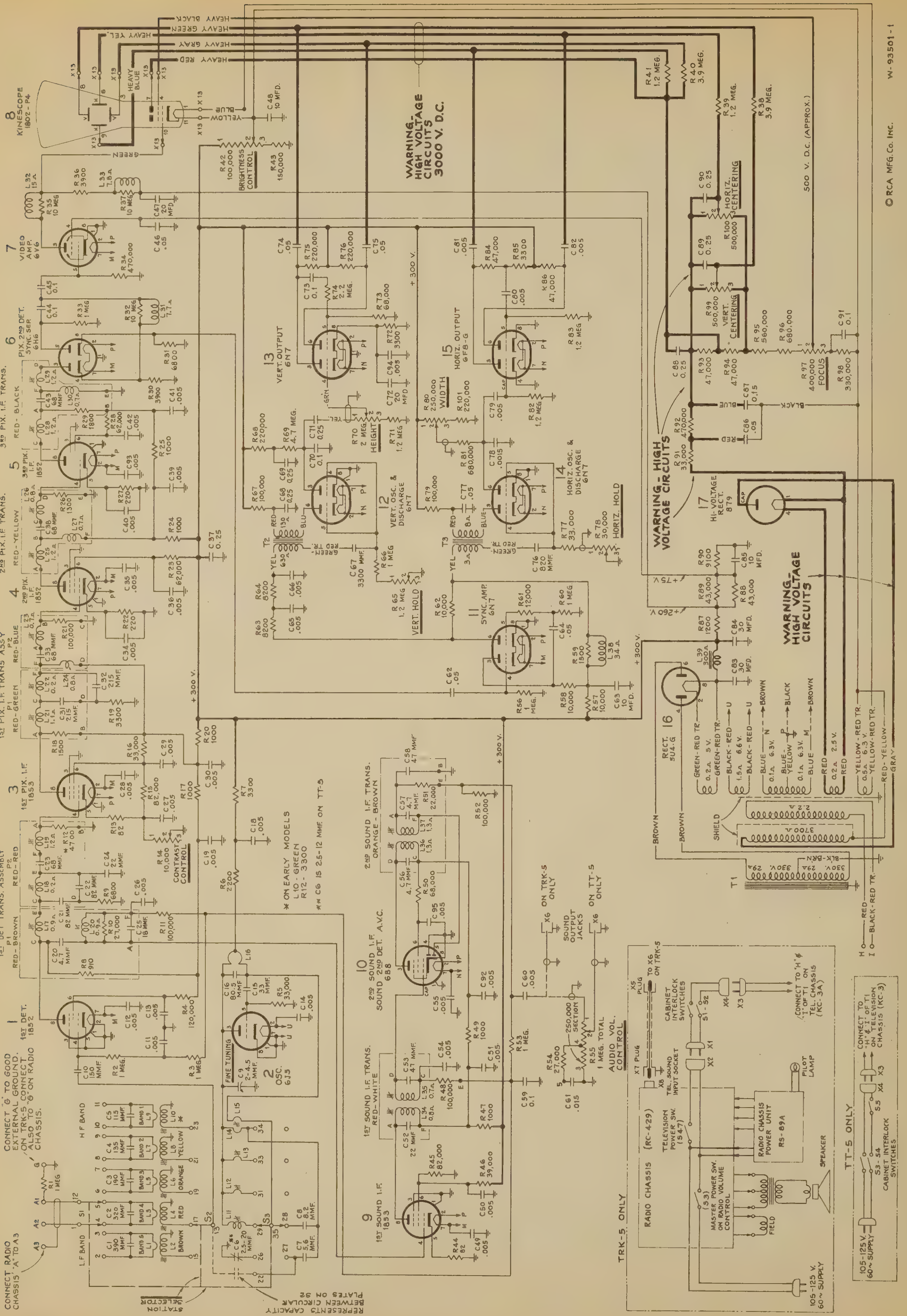

8 KINESCOPE 1802-P4
7 VIDEO AMP. 6V6
6 PIX. 2ND DET. SYNC. SEP. 6H6
5 3RD PIX. I.F. 1852
4 2ND PIX. I.F. 1852
3 1ST PIX. I.F. 1853
1 1ST DET. 1852
2 OSC. 6J5
9 1ST SOUND I.F. 1853
10 2ND SOUND I.F. SOUND 2ND DET. A.V.C. 6Q8
11 SYNC. AMP. 6N7
12 VERT. OSC. & DISCHARGE 6N7
13 VERT. OUTPUT 6N7
14 HORIZ. OSC. & DISCHARGE 6N7
15 HORIZ. OUTPUT 6F8-G
16 RECT. 5U4-G
17 HI-VOLTAGE RECT. 879
WARNING-HIGH VOLTAGE CIRCUITS 3000 V. D.C.
WARNING-HIGH VOLTAGE CIRCUITS
500 V. D.C. (APPROX.)
HEAVY BLACK
HEAVY GREEN
HEAVY YEL.
HEAVY GRAY
HEAVY RED
HEAVY BLUE
BRIGHTNESS CONTROL
CONTRAST CONTROL
FINE TUNING
VERT. HOLD
HEIGHT
WIDTH
HORIZ. HOLD
VERT. CENTERING
HORIZ. CENTERING
FOCUS
AUDIO VOL. CONTROL
1ST DET TRANS. ASSEMBLY
1ST PIX. I.F. TRANS ASS'Y
2ND PIX. I.F. TRANS.
3RD PIX. I.F. TRANS.
1ST SOUND I.F. TRANS. RED-WHITE
2ND SOUND I.F. TRANS. ORANGE-BROWN
* ON EARLY MODELS L10 - GREEN R12 - 3300
** C6 IS 2.5-12 MMF. ON TT-5
CONNECT 'G' TO GOOD EXTERNAL GROUND. ON TRK-5 CONNECT ALSO TO 'G' ON RADIO CHASSIS.
CONNECT RADIO CHASSIS 'A' TO A3
STATION SELECTOR
REPRESENTS CAPACITY BETWEEN CIRCULAR PLATES ON S2
L.F. BAND
H.F. BAND
SOUND OUTPUT JACKS
ON TRK-5 ONLY
ON TT-5 ONLY
TRK-5 ONLY
RADIO CHASSIS (RC-429)
TELEVISION POWER SW. (S47)
MASTER POWER SW. ON RADIO VOLUME CONTROL
RADIO CHASSIS POWER UNIT RS-89A
SPEAKER
FIELD
PILOT LAMP
TEL. SOUND INPUT SOCKET
CABINET INTERLOCK SWITCHES
CONNECT TO 'I' OF T1 ON TEL. CHASSIS (KC-3A)
105-125 V. 60~ SUPPLY
TT-5 ONLY
CONNECT TO 'H' & 'I' OF T1 ON TELEVISION CHASSIS (KC-3)
T1
SHIELD
©RCA MFG. Co. INC.
W-93501-1

Figure 8—Schematic Diagram Television Chassis

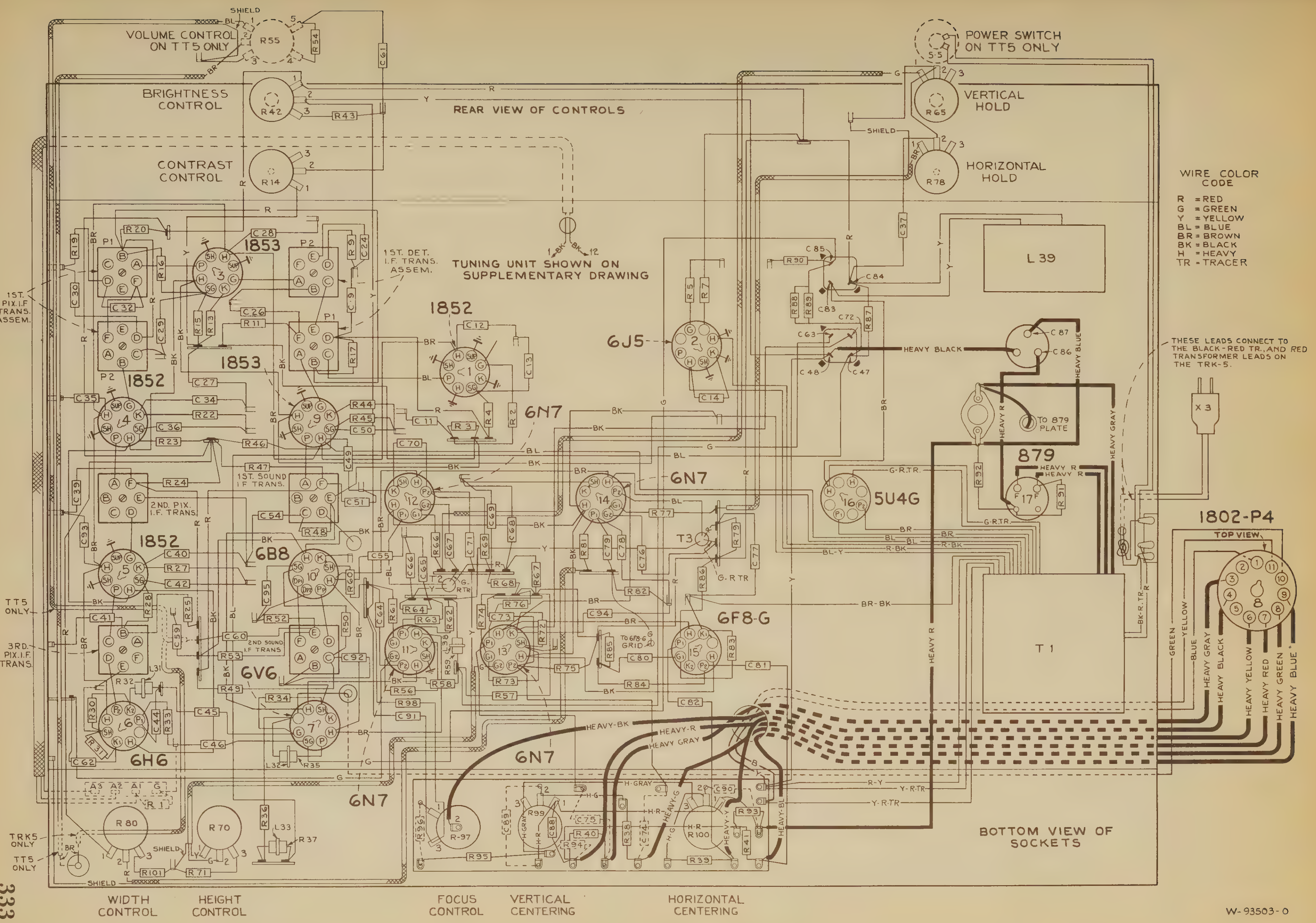
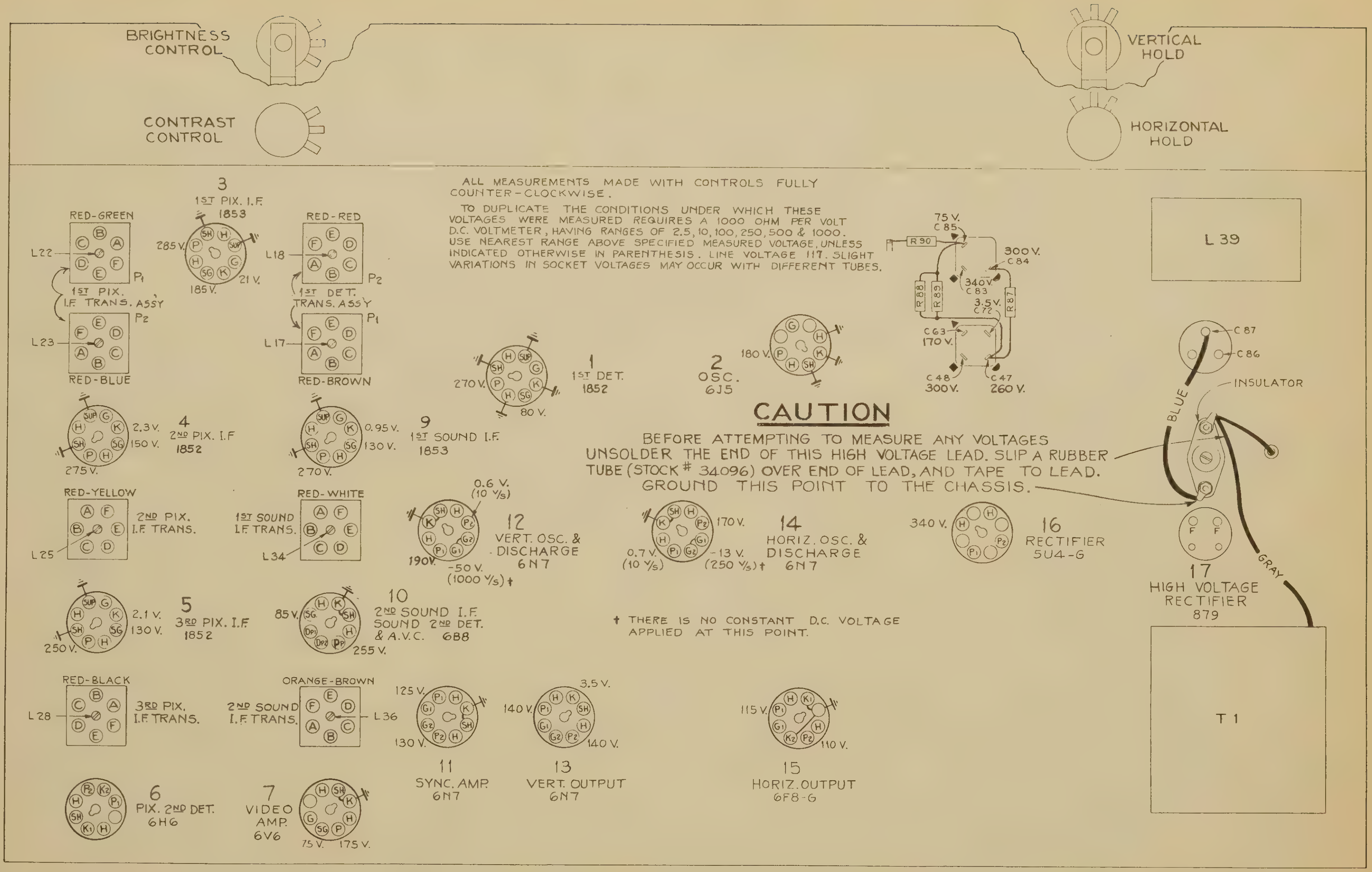


Figure 9—Wiring Diagram Television Chassis



ALL MEASUREMENTS MADE WITH CONTROLS FULLY COUNTER-CLOCKWISE.

TO DUPLICATE THE CONDITIONS UNDER WHICH THESE VOLTAGES WERE MEASURED REQUIRES A 1000 OHM PER VOLT D.C. VOLTMETER, HAVING RANGES OF 2.5, 10, 100, 250, 500 & 1000. USE NEAREST RANGE ABOVE SPECIFIED MEASURED VOLTAGE, UNLESS INDICATED OTHERWISE IN PARENTHESIS. LINE VOLTAGE 117. SLIGHT VARIATIONS IN SOCKET VOLTAGES MAY OCCUR WITH DIFFERENT TUBES.

CAUTION

BEFORE ATTEMPTING TO MEASURE ANY VOLTAGES UNSOLDER THE END OF THIS HIGH VOLTAGE LEAD. SLIP A RUBBER TUBE (STOCK # 34096) OVER END OF LEAD, AND TAPE TO LEAD. GROUND THIS POINT TO THE CHASSIS.

† THERE IS NO CONSTANT D.C. VOLTAGE APPLIED AT THIS POINT.

Figure 7—Voltage Diagram Television Chassis

Radio Receiver Chassis No. RC-429 and Socket Power Unit No. RS-89A

Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receiver

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Electrical Specifications

Frequency Ranges
Standard Broadcast ("A" band)............540-1720 kc
Medium Wave ("B" band)................2.3-7.0 mc
Short Wave ("C" band)....................7.0-22 mc

Intermediate Frequency.. 455 kc

Tube Complement
(1) RCA-6A8-G.................... 1st-Det., and Osc.
(2) RCA-6K7 ....I-F Amplifier
(3) RCA-6Q7.............. 2nd-Det., A.V.C., 1st Audio
(4) RCA-6J5......................... Phase Inverter
(5) RCA-6K6-G .... Power Output
(6) RCA-6K6-G ....Power Output
(7) RCA-6U5 ....“Magic Eye”
(8) RCA-5Y3-G (in SPU RS-89A)...Full-Wave Rectifier

Dial Lamps .... Mazda No. 44, 6.3 volts, .25 amp.

Power Supply Rating .... 105-125 volts, 60 cycles, 75 watts

Power Output
Undistorted .... 5 watts
Maximum .... 5.5 watts

Electric Tuning Ranges
Two stations between approximately......... 550-950 kc
Two stations between approximately......... 690-1,225 kc
Two stations between approximately......... 890-1,500 kc

Loudspeaker (RL-70H-5)
Type .... 12-inch electrodynamic
Voice-Coil impedance ....2.2 ohms at 400 cycles

Mechanical Specifications

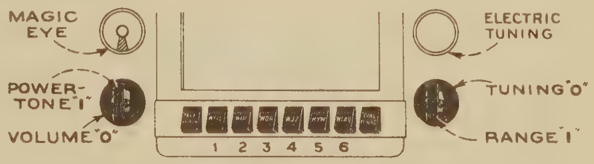
RC-429 Chassis Base Dimensions:
Height .... 2-½ inches
Width .... 13 inches
Depth .... 6-½ inches
Over-all Chassis Height .... 6-½ inches
Tuning Drive Ratio .... 12 to 1

General Description

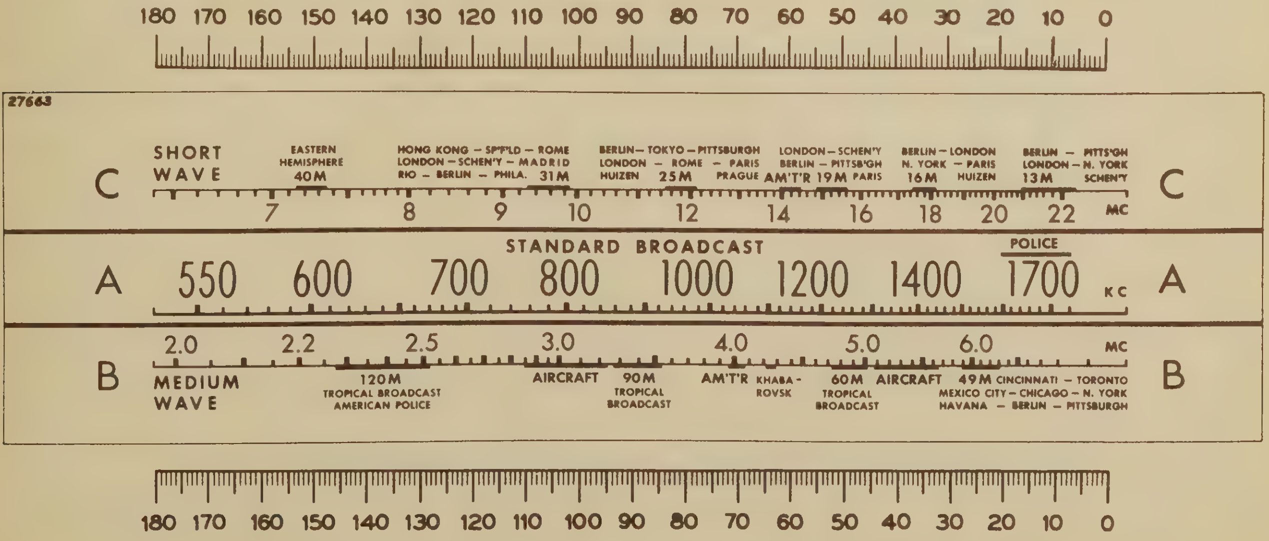
Radio receiver chassis No. RC-429 is used in RCA Victor Television console Model TRK-5.

The audio output of the television chassis is connected to the audio input of the RC-429 chassis by means of jack X-8 and the left-hand push-button switch (S44, S45, S46).

A separate plug-in power supply unit, RS-89A, is used to supply heater and plate voltage to the RC-429 chassis. Service data and diagrams for the power unit are contained in the following pages.



Location of Controls (Radio)



Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure
(RADIO CHASSIS)

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

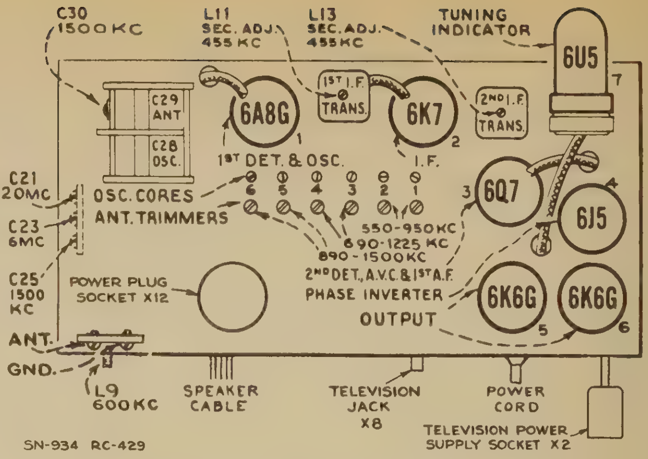
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial if fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



SN-934 RC-429

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Step	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6A8-G 1st-Det. grid cap, in series with .01 mfd.			L10 and L11 (1st I-F Trans.)
3	Antenna terminal, in series with 200 mmfd.	600 kc	600 kc 150.5°	L9 (osc.)
4		1,500 kc	1,500 kc 28°	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna terminal, in series with 300 ohms	6 mc	6 mc 26.5°	C23 (osc.)*
7		20 mc	20 mc 22°	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

* Use **minimum** capacity peak if two peaks can be obtained, and check for image by tuning radio approximately 910 kc lower.

Note: The oscillator tracks above the signal on all bands.

Adjustments for Electric Tuning

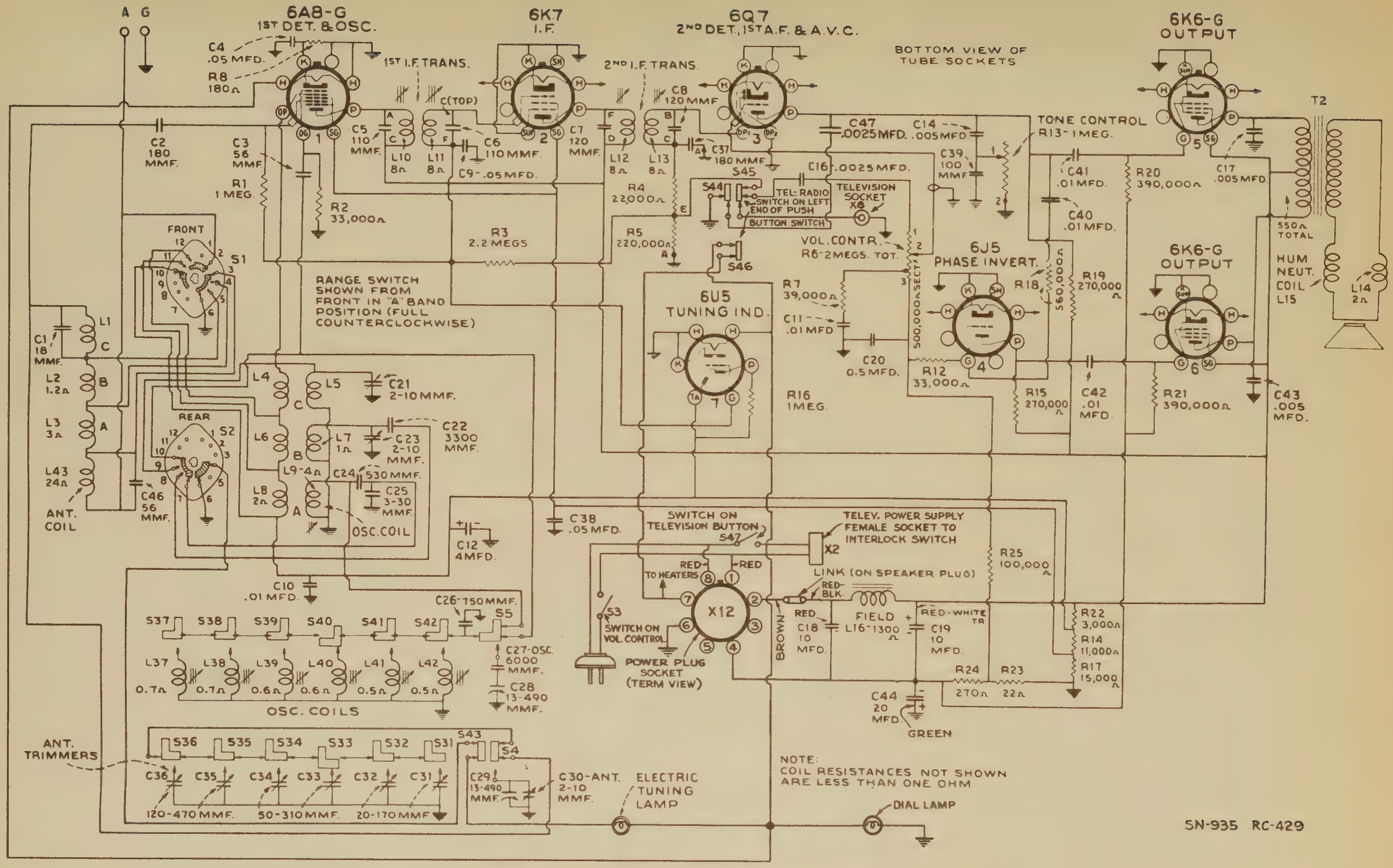
These models have eight push buttons. The left-hand button is a Television switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

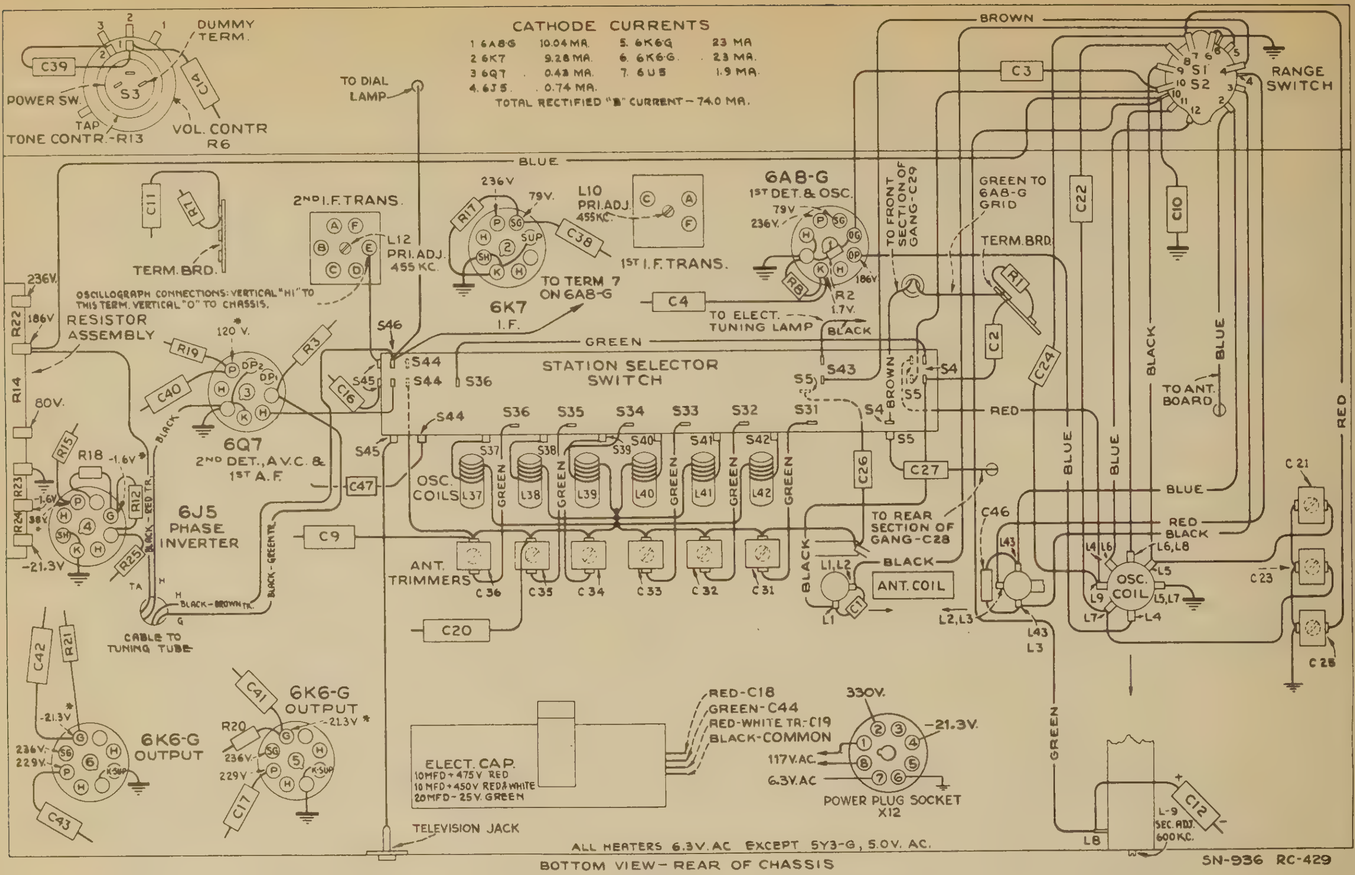
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the "Magic Eye" to ensure sharp peaking.



Schematic Circuit Diagram, Chassis No. RC-429

Precautionary Lead Dress:

1. Electric tuning lamp leads to S43 must be dressed in front of the range switch.
2. Dress leads away from antenna coil.
3. Leads across back of chassis must be dressed away from television jack (X8).
4. C26 (750 mmfd.) on push-button switch assembly must be dressed carefully to prevent shorts.

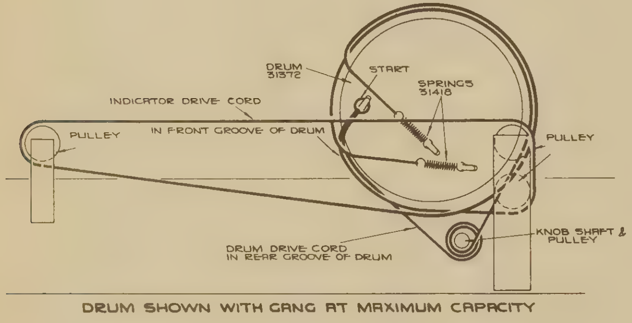


CATHODE CURRENTS

1 6A8·G	10.04 MA.	5. 6K6·G	23 MA
2 6K7	9.28 MA.	6. 6K6·G.	23 MA.
3 6Q7	0.43 MA.	7. 6U5	1.9 MA.
4. 6J5.	0.74 MA.		

TOTAL RECTIFIED "B" CURRENT – 74.0 MA.

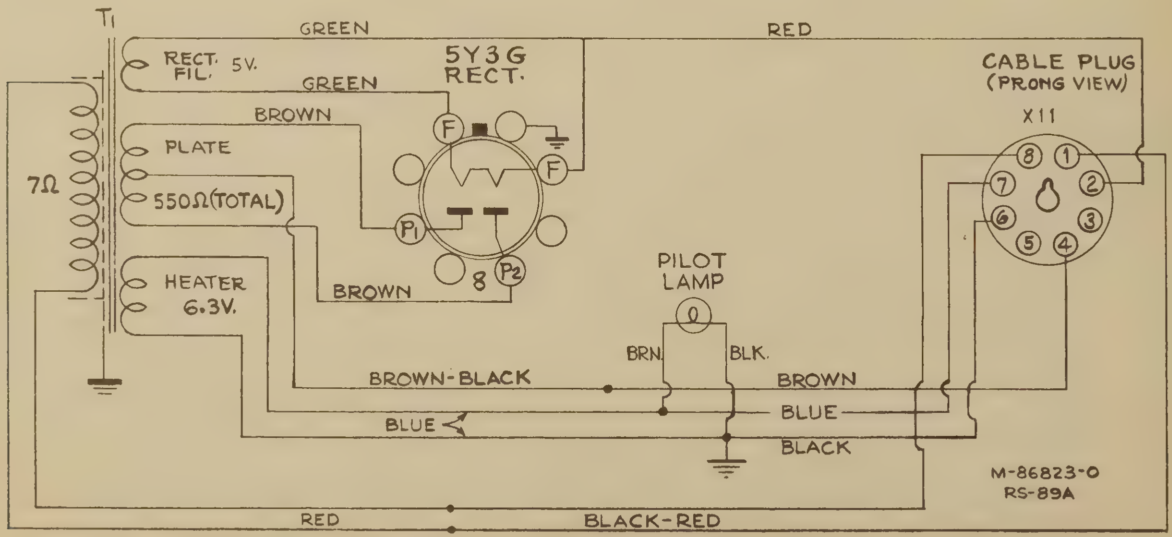
R-F Wiring Diagram, Chassis No. RC-429



Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

At Left—Dial Mechanism



SPU Schematic Diagram, RS-89A

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
	TELEVISION CHASSIS ASSEMBLIES TRK-5—KC-3A TT-5—KC-3	
33387	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L11, L12, L14, L15)	
33835	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L13)	
31253	Board—Antenna ground terminal board	
12884	Capacitor—Plunger type air-trimmer—2½ to 20 mmfd. (Model TRK-5 only) (C6)	
12714	Capacitor—Plunger type air-trimmer—2½ to 12 mmfd. (C6) (Model TT-5 only)	
33097	Capacitor—4.7 mmfd. 500 volts (neg. temp. coeff.) (C20, C56, C57)	
33478	Capacitor—5.6 mmfd., 500 volts (neg. temp. coeff.) (C7)	
33476	Capacitor—8.2 mmfd., 500 volts (neg. temp. coeff.) (C8)	
33100	Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C25)	
33101	Capacitor—22 mmfd., 500 volts (neg. temp. coeff.) (C24, C52)	
33111	Capacitor—33 mmfd., 500 volts (neg. temp. coeff.) (C15)	
33102	Capacitor—47 mmfd., 500 volts (neg. temp. coeff.) (C53, C58)	
33103	Capacitor—68 mmfd., 500 volts (neg. temp. coeff.) (C23, C33, C38, C43)	
33477	Capacitor—80.5 mmfd., 500 volts (neg. temp. coeff.) (C16)	
33104	Capacitor—82 mmfd., 500 volts (neg. temp. coeff.) (C21, C22)	
33106	Capacitor—115 mmfd. (C5)	
33107	Capacitor—135 mmfd., (C4)	
12725	Capacitor—150 mmfd., (C10)	
33108	Capacitor—190 mmfd., (C3)	
33105	Capacitor—215 mmfd., 500 volts (neg. temp. coeff.) (C31, C32)	
33109	Capacitor—320 mmfd. (C2)	
33110	Capacitor—390 mmfd. (C1)	
12536	Capacitor—820 mmfd., 400 volts (C76)	
4881	Capacitor—3,300 mmfd., 400 volts (C67)	
33806	Capacitor—.0015 mfd., 1,500 volts (C78)	
33584	Capacitor—.005 mfd., 1,200 volts (C11, C12, C13, C14, C18, C19, C26, C27, C28, C29, C30, C34, C35, C36, C39, C40, C41, C42, C49, C50, C51, C54, C55, C60, C65, C66, C79, C80, C92, C93, C94, C95)	
33340	Capacitor—.005 mfd., 3,000 volts (C81, C82)	
11315	Capacitor—.015 mfd., 400 volts (C61) (Model TT-5 only)	
32787	Capacitor—.05 mfd., 400 volts (C46, C64)	
4886	Capacitor—.05 mfd., 400 volts (C62, C77)	
33341	Capacitor—.05 mfd., 3,000 volts (C74, C75)	
32786	Capacitor—.1 mfd., 300 volts (C45, C44)	
4839	Capacitor—.1 mfd., 400 volts (C59, C91, C70, C73)	
33020	Capacitor—.15 mfd., 2,500 volts (C87) .05 mfd., 3,000 volts (C86)	
30965	Capacitor—.25 mfd., 200 volts (C68, C71)	
12484	Capacitor—.25 mfd., 350 volts (C37, C69, C88, C89, C90)	
33195	Capacitor—10 mfd., 450 volts; 10 mfd., 450 volts; 20 mfd., 450 volts; 20 mfd., 25 volts (C63, C48, C47, C72)	
33190	Capacitor—30 mfd., 450 volts; 30 mfd., 450 volts; 10 mfd., 150 volts (C83, C84, C85)	
33120	Choke—Filter choke (L39)	
33243	Coil—High frequency oscillator coil with core and stud (L11)	
33234	Coil—1¾-turn antenna coil, core, stud and capacitor assembly (C5, L9, L10) (green)	
33233	Coil—2-turn antenna coil core, stud and capacitor assembly (C4, L7, L8) (yellow)	
33232	Coil—3-turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange)	
33231	Coil—5¾-turn antenna coil, core, stud and capacitor assembly (C2, L3, L4) (red)	
33230	Coil—7½-turn antenna coil, core, stud and capacitor assembly (C1, L1, L2) (brown)	
33538	Coil—Peaking coil and 10 meg., ½ watt resistor assembly (L33, R37)	
33539	Coil—Peaking coil and 10 meg. resistor assembly (L31, R32)	
33540	Coil—Peaking coil and 10 meg., ½ watt resistor assembly (L32, R35)	
33541	Coil—Peaking coil and 1,500 ohm, ½ watt resistor assembly (L38, R59)	
33228	Condenser—Adjustable oscillator tuning condenser mounted on band switch (C9)	
33385	Connector—Insulated plate connector and lead (Use with 879 Rectifier Tube)	
33280	Control—Audio volume control—1 meg. (Model TT-5 only) (R55)	
33274	Control—Dual contrast and brightness control 10,000 ohm and 100,000 ohm (R14, R42)	
33275	Control—Dual horizontal and vertical holding control—30,000 ohm and 1.2 meg. (R78, R65)	
33278	Control—250,000 ohm "Width" control (R80)	
33276	Control—400,000 ohm 'focus" control (R97)	
33277	Control—500,000 ohm "Vert. cent."—"Hor. cent." control (R99, R100)	
33279	Control—2 megohm "Height" control (R70)	
33015	Insulator—Stand-off porcelain insulator—less hardware	
4449	Knob—"Focus" control knob	
33225	Nut—Speed nut for use with high frequency coil assemblies (Pkg. of 10)	
14278	Receptacle—Television sound output receptacle (X6)	
14074	Resistor—82 ohms, ¼ watt (R13, R44)	
14561	Resistor—220 ohms, ¼ watt (R27, R22)	
11352	Resistor—910 ohms, ¼ watt (R8)	
14720	Resistor—1,000 ohms, ¼ watt (R17, R25, R49)	
30152	Resistor—1,000 ohms, 1 watt (R20, R24, R47)	
33318	Resistor—1,200 ohms, 2 watts (R87)	
11351	Resistor—1,300 ohms, ¼ watt (R26)	
14499	Resistor—1,500 ohms, ¼ watt (R18)	
12194	Resistor—1,800 ohms, ¼ watt (R29)	
13486	Resistor—2,200 ohms, 1 watt (R6)	
13031	Resistor—3,300 ohms, 1/10 watt (R12 in early production)	
12312	Resistor—3,300 ohms, ¼ watt (R19, R72, R85)	
30150	Resistor—3,300 ohms, 1 watt (R7)	
12955	Resistor—3,900 ohms, ¼ watt (R30)	
33566	Resistor—3,900 ohms, 2 watts (R36)	
11650	Resistor—4,700 ohms, 1/10 watt (R12 in later production)	
12265	Resistor—6,800 ohms, ¼ watt (R31, R9)	
14075	Resistor—8,200 ohms, ¼ watt (R63, R64)	
3155	Resistor—9,100 ohms, 1 watt (R90)	
3078	Resistor—10,000 ohms, ½ watt (R58, R62)	
8043	Resistor—10,000 ohms, 2 watts (R57)	
30128	Resistor—12,000 ohms, ¼ watt (R61)	
14284	Resistor—22,000 ohms, 1/10 watt (R51)	
14390	Resistor—27,000 ohms, 1/10 watt (R10)	
12738	Resistor—27,000 ohms, ¼ watt (R54) (Model TT-5 only)	
12454	Resistor—33,000 ohms, ¼ watt (R5, R77)	
33639	Resistor—33,000 ohms, 1 watt (R91)	
30683	Resistor—33,000 ohms, 1 watt (R16)	
30434	Resistor—39,000 ohms, 1 watt (R46)	
33182	Resistor—43,000 ohms, 2 watts (R88, R89)	
12412	Resistor—47,000 ohms, ¼ watt (R93, R94)	
30495	Resistor—47,000 ohms, 1 watt (R84, R86)	
33567	Resistor—62,000 ohms, ½ watt (R28, R23)	
13715	Resistor—68,000 ohms, ¼ watt (R73)	
30679	Resistor—68,000 ohms, 1 watt (R50)	
8064	Resistor—82,000 ohms, ½ watt (R15, R45)	
11281	Resistor—100,000 ohms, 1/10 watt (R21)	
14560	Resistor—100,000 ohms, ¼ watt (R11, R48, R52, R67, R79)	
30180	Resistor—120,000 ohms, ½ watt (R4)	
30493	Resistor—150,000 ohms, ½ watt (R43)	
12264	Resistor—220,000 ohms, ¼ watt (R68, R75, R76, R101)	
33501	Resistor—330,000 ohms, 1 watt (R98)	
12285	Resistor—470,000 ohms, ¼ watt (R34)	
33502	Resistor—470,000 ohms, 1 watt (R92)	
33593	Resistor—560,000 ohms, 1 watt (R95)	
12413	Resistor—680,000 ohms, ¼ watt (R81)	
33598	Resistor—680,000 ohms, 1 watt (R96)	
13730	Resistor—1 meg. ¼ watt (R1, R2, R3, R33, R53, R60, R56, R66)	
30208	Resistor—1.2 meg., ¼ watt (R39, R82, R83, R71, R41)	
12679	Resistor—2.2 meg., ¼ watt (R74)	
13167	Resistor—3.9 meg., ¼ watt (R38, R40)	
30931	Resistor—4.7 meg., ½ watt (R69)	
33229	Roller—Rubber friction roller for use on band switch for adjustment of oscillator trimmer	
3682	Shield—Tube shield for "Hor. out." tube	
33211	Socket—4-prong rectifier tube socket	
31251	Socket—Octal base wafer type tube socket	
33001	Socket—11-prong magnal Kinescope socket (X13)	
18008	Socket—6J5 oscillator tube socket	
33226	Switch—Band switch complete—less tuning condenser and friction roller	
33281	Switch—Rotary type power switch (S5) (Model TT-5 only)	
33519	Transformer—"1st Det. P1" I-F transformer (R8, C20, L17, L20, R10, C25) (red and brown)	
33520	Transformer—"1st Det. P2" I-F transformer (L18, C21, C22, C23, L19, R12) (red and red)	
33523	Transformer—"1st pix P1" I-F transformer (L21, L22, R18, C31) (red and green)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
33524	Transformer—"1st pix P2" I-F transformer (L23, L24, C33, R21) (red and blue)	
33526	Transformer—"1st Sound" I-F transformer (L34, L35, C52, C53) (red and white)	
33522	Transformer—"2nd Picture" I-F transformer (L25, L26, L27, C38, R26) (red and yellow)	
33527	Transformer—"2nd Sound" I-F transformer (L36, L37, C56, C57, R51) (brown and orange)	
33525	Transformer—"3rd Picture" I-F transformer (L28, L29, L30, C43, R29) (red and black)	
32899	Transformer—Horizontal oscillation transformer (T3)	
33390	Transformer—Plate and filament power transformer (T1)	
32898	Transformer—Vertical oscillation transformer (T2)	

3 BAND RADIO RECEIVER

No. RC-429 Used with Model TRK-5

STOCK No.	DESCRIPTION	
14517	Board—Antenna—Ground terminal board	
30752	Bracket—"Magic Eye" bracket	
30766	Cap—Rubber cap for "Magic Eye"	
32486	Capacitor—Antenna coil trimmer capacitor bank (C31, C32, C33, C34, C35, C36)	
31400	Capacitor—Triple adjustable trimmer, two sections, 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	
12722	Capacitor—18 mmfd. (C1)	
12723	Capacitor—56 mmfd. (C3, C46)	
12720	Capacitor—100 mmfd. (C39)	
14262	Capacitor—109 mmfd. (C5, C6)	
12404	Capacitor—120 mmfd. (C7, C8)	
14712	Capacitor—180 mmfd. (C37)	
30232	Capacitor—200 mmfd. (C2)	
32492	Capacitor—530 mmfd. (C24)	
31435	Capacitor—750 mmfd. (C26)	
4881	Capacitor—3,300 mmfd. (C22)	
31405	Capacitor—6,000 mmfd. (C27)	
5107	Capacitor—.0025 mfd., 700 volt (C16, C47)	
4838	Capacitor—.005 mfd., 1,000 volt (C14, C17, C43)	
14393	Capacitor—.01 mfd., 300 volt (C11)	
30882	Capacitor—.05 mfd., 200 volt (C4, C9, C38)	
4858	Capacitor—.01 mfd., 500 volt (C10, C40, C41, C42)	
30867	Capacitor—0.5 mfd., 200 volt (C20)	
32145	Capacitor—4 mfd., 450 volt (C12)	
32142	Capacitor—10-10-20 mfd. (C18, C19, C44)	
31382	Clip—Push button coil and core mounting clip.	
32493	Coil—Antenna coil assembly A, B, and C band (L1, L2, L3, L43)	
31385	Coil—Push button oscillator coil, "A" band (L37, L38) (550-950KC)	
32487	Coil—Push button oscillator coil, "A" band (L39, L40) (690-1225KC)	
31383	Coil—Push button oscillator coil, "A" band (L41, L42) (890-1,500KC)	
31951	Coil—Oscillator coil assembly for A, B, and C bands (L4, L5, L6, L7, L8, L9)	
31369	Condenser—2 gang variable tuning condenser (C28, C29, C30)	
33497	Control—Dual volume and tone control and switch (R6, R13, S3)	
32634	Cord—Drive cord with clamping clips	
12800	Core—Adjustable core and stud for oscillator coil	
31372	Drum—Variable condenser drive cord drum and calibration dial	
11891	Lamp—6.3 volt dial lamp (Mazda No. 44)	
32670	Plate—Dial plate assembly	
12493	Plug—Female speaker cable plug (X10)	
32552	Pointer—Dial pointer	
31373	Pulley—Pointer drive cord pulley	
14278	Receptacle—Television sound input socket (X8)	
32143	Resistor—Voltage divider comprising one 11,000 ohm, one 3,000 ohm, one 22 ohm and one 270 ohm section (R14, R22, R23, R24)	
30545	Resistor—180 ohms, ¼ watt (R8)	
5114	Resistor—15,000 ohms, 1 watt (R17)	
14284	Resistor—22,000 ohms, 1/10 watt (R4)	
12454	Resistor—33,000 ohms, ¼ watt (R2, R12)	
12266	Resistor—39,000 ohms, ¼ watt (R7)	
14560	Resistor—100,000 ohms, ¼ watt (R25)	
11398	Resistor—220,000 ohms, 1/10 watt (R5)	
12199	Resistor—270,000 ohms, ¼ watt (R15, R19)	
13479	Resistor—390,000 ohms, ¼ watt (R20, R21).	
12486	Resistor—560,000 ohms, ¼ watt (R18)	
12013	Resistor—1 meg., 1/10 watt (R16)	
13730	Resistor—1 meg., ¼ watt (R1)	
12679	Resistor—2.2 meg., ¼ watt (R3)	
14343	Retainer—Retainer for stock No. 33500 tuning shaft	
14887	Retainer—Retainer spring for stock No. 31373 pulley	
33500	Shaft—Tuning shaft	
12581	Shield—I-F transformer shield top	
31319	Socket—8 prong socket for power supply plug (X12)	
31639	Socket—Dial lamp socket, one wire non-insulated	
31364	Socket—Dial lamp socket, two wire insulated	
13871	Socket—Magic eye socket	
31251	Socket—Octal type tube socket	
31418	Spring—Indicator or drive cord tension spring	
33496	Switch—Range switch (S1, S2)	
33498	Switch—Station selector push button switch (S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S4, S5, S44, S45, S46)	
33499	Switch—Television power switch and cover (S47)	
14376	Transformer—1st I. F. transformer complete (L10, L11, C5, C6)	
14283	Transformer—2nd I. F. transformer complete (L12, L13, C7, C8, C37, R4, R5)	

POWER SUPPLY UNIT

RS—89—A

USED WITH RC—429

STOCK No.	DESCRIPTION	
33606	Plug—8 prong plug for power supply cable (X11)	
31251	Socket—Octal base tube socket	
33224	Transformer—Power transformer (T1)	

SPEAKER ASSEMBLIES

TRK-5

RL-70—H-5

STOCK No.	DESCRIPTION	
31825	Cap—Speaker cone dust cap	
11469	Coil—Hum bucking coil (L15)	
12012	Coil—Speaker field coil (L16)	
31275	Cone—Speaker cone and voice coil (L14)	
31539	Plug—5 prong male speaker plug with link (X9)	
32146	Speaker—Speaker complete	
14534	Transformer—Output transformer (T2)	

MISCELLANEOUS ASSEMBLIES

MODEL TRK-5

MODEL TT-5

STOCK No.	DESCRIPTION	
31397	Button—Station selector push button (Model TRK-5 only)	
33597	Cap—Pilot lamp "bull's eye" (Model TRK-5 only)	
33480	Cable—38-inch shielded cable with two male plugs. Used between Radio and television chassis (Model TRK-5 only) (X5, X7)	
33479	Cable—61-inch audio connection cable with two male connectors (Model TT-5 only) (X5, X7)	
33363	Connector—2 prong female plug for interlock cable (X2)	
4573	Connector—2 prong female connector used on television power cable (X4)	
31456	Cover—Package of eight protective push button covers	
32673	Dial—3-band glass dial scale	
33481	Escutcheon—Dial escutcheon and scale (Model TRK-5 only)	
33518	Glass—Safety protective glass for kinescope	
33506	Knob—Band switch knob (Model TRK-5 only).	
33471	Knob—"Brightness", "Vert. hold" or "volume" knob	
33470	Knob—"Contrast", "Hor. hold", "Fine tuning" or "Tone control" knob	
33469	Knob—"Off-on" control knob (Model TT-5 only)	
33505	Knob—Radio tuning knob (Model TRK-5 only)	
33472	Knob—"Station selector" control knob (white dot)	
33468	Knob—"Volume" control knob	
11891	Lamp—6.3 volt, Pilot indicator lamp (Mazda No. 44)	
31458	Marker—"Dial tuning" marker tab (Model TRK-5 only)	
33596	Marker—"Television marker tab (Model TRK-5 only)	
31589	Marker—Complete set of station call letter markers (TRK-5 only)	
33225	Nut—"Speed nut" for high frequency coil assembly	
4577	Plug—2 prong male connector used on television power cable (X3)	
33244	Plug—2 prong male connector used on interlock cable (X1)	
12493	Plug—5 prong female speaker connector plug (Model TRK-5 only)	
11210	Screw—¼x20x1 in. chassis mounting screw, washer and lock washer (5 req'd)	
4560	Screw—¼x20x1¼ chassis mounting screw, washer and lock washer (6 req'd)	
14270	Spring—Knob spring for stock No. 33468, 33471, 33472 and 33469 knobs	
30330	Spring—Knob spring for stock No. 33470 knob	
4982	Spring—Knob spring for stock No. 33505 knob	
33384	Switch—Interlock switch and cover (S1, S2, TRK-5, S3, S4, TT-5)	

RCA Victor

MODEL TRK-9 and MODEL TRK-12

Chassis Nos. KC-4A, KK-7A, RC-427A, RS-83E; Chassis Nos. KC-4, KK-7, RC-427, RS-83E

AC, Superheterodyne, High-Picture-Definition, Five-Television-Channel, Receiver

and

Twelve-Tube, Three-Band, Electric Tuning, AC, Superheterodyne Broadcast Receiver

TECHNICAL INFORMATION AND SERVICE DATA

—1939 No. 17—

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

A Service of the Radio Corporation of America

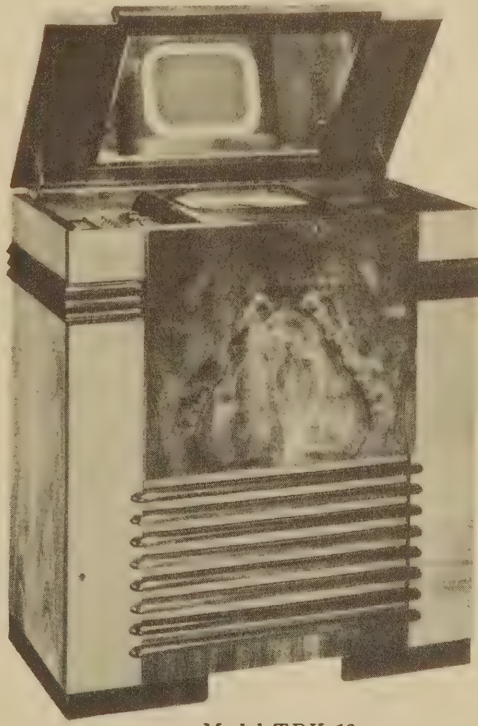
General Specifications

	Model TRK-9	Model TRK-12
Height	$47\frac{1}{2}$ in.	$40\frac{5}{8}$ in.
Depth	$24\frac{3}{16}$ in.	$19\frac{7}{8}$ in.
Width	$31\frac{1}{2}$ in.	$34\frac{5}{8}$ in.
Weight	200 lb.	198 lb.
Shipping Weight	283 lb.	275 lb.

Power Supply Rating .... 105-125 volts, 60 cycles, 420 watts (Total)

Fuse Rating .... 3 amperes

Model TRK-9



Model TRK-12

General Description

The TRK-12 consists of a console-type, high-picture-definition, mirror-viewing, five channel, Television Receiver and a twelve-tube, three-band broadcast radio receiver enclosed in a handsomely styled modern cabinet. Features of the Television receiver include: Twelve-inch Kinescope; Styrol (humidity-resisting) r-f and i-f transformer forms; black and white pictures; single station selector switch; temperature compensated condensers; iron core i-f and r-f tuning; double safety switch protection; safety-glass viewing shield; extra large viewing mirror for wide angle viewing; automatic brightness control; and automatic volume control.

The TRK-9 is a direct viewing, high-picture-definition, console-type, five channel, Television Receiver and a twelve-tube, three-band broadcast radio receiver in a deluxe upright modern cabinet. Television features of this receiver are the same as for the TRK-12, except that a nine-inch Kinescope is used.

Trademarks "Magic Eye," "Kinescope," "Victrola," Reg. U. S. Pat. Off. by RCA Mfg. Co., Inc.

TELEVISION RECEIVER

Electrical Specifications

RCA Tube Complement

In KC-4 (TRK-12), and KC-4A (TRK-9) Video Chassis

(1) RCA-1852
(2) RCA-6J5
(3) RCA-1853
(4) RCA-1853
(5) RCA-1853
(6) RCA-1853
(7) RCA-1852
(8) RCA-6H6
(9) RCA-6F8-G
(10) RCA-1852
(11) RCA-6H6
(12) Kinescope*
(13) RCA-6SK7
(14) RCA-1853
(15) RCA-6H6
(16) RCA-6N7
(17) RCA-6Y6-G
(18) RCA-6N7
(19) RCA-6N7
(20) RCA-6L6
(21) RCA-5V4-G
(22) RCA-6N7
(23) RCA-6J5

* RCA-1804-P4 used in TRK-9.

* RCA-1803-P4 used in TRK-12.

In KK-7 (TRK-12) and KK-7A (TRK-9) Socket Power Units

(24) RCA-5T4	Low Voltage Rectifier
(25) RCA-2V3-G	High Voltage Rectifier

Television Channels (Selector Switch Positions)

1	84 to 90 mc.
2	78 to 84 mc.
3	66 to 72 mc.
4	50 to 56 mc.
5	44 to 50 mc.

Over-all Video Band Width	4 mc.
Scanning	Interlaced, 441 Line
Horizontal (Line) Scanning Frequency (Sawtooth Wave)	13,230 cps
Vertical (Field) Scanning Frequency (Sawtooth Wave)	60 cps
Frame Frequency (Picture Repetition Rate)	30 cps

Picture Size (Approx. Mask Dimensions)

TRK-9	5½ x 7¼ in.
TRK-12	7⅜ x 9¾ in.

Mechanical Specifications

Video Chassis Base Dimensions	17 in. x 16 in.	Max. Height 8½ in.
SPU Chassis Base Dimensions	15 in. x 13¼ in.	Max. Height 10 in.

IMPORTANT PRECAUTIONS

Do not attempt to measure the high voltage (7,500 volts).

ALWAYS replace the red can over the 2V3-G high voltage rectifier. The most dangerous portion of the H.V. supply is the plate lead of the 2V3-G tube.

Do not eliminate the protection afforded by the interlock switches, or measure any voltages on the video chassis unless the primary leads of the high voltage transformer have been unsoldered from the supply line, and taped.

A good ground should be connected to the receiver at all times.

Always wear gloves and shatter-proof goggles when handling Kinescope tubes.

Use only one hand when working on the high voltage SPU chassis, and always connect a shorting lead to ground (first), then to the high side of the first high voltage filter capacitor.

Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and, due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than ordinary receiving tubes.

The large end of the Kinescope bulb — particularly that part at the rim of the viewing surface — must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or deflecting yoke smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

The RCA-1803-P4 (12-inch) Kinescope is equipped with a protective lid and shield. Do not at any time remove the close-fitting cone-shaped section of the protective shield from the Kinescope. This section should be installed with the tube in the cabinet and is designed to protect the user while handling the glass bulb.

CAUTION: Do not open the shipping carton, install, remove, or handle the Kinescope in any manner, unless shatter-proof goggles and heavy gloves are worn. People not so equipped should be kept away while handling Kinescopes. Keep Kinescope away from the body while handling.

Important Notes

1. Detailed explanations of the receiver circuit operation may be found in the booklet: **Practical Television by RCA.**

2. Because of the special equipment and procedure necessary for the proper alignment of these receivers, the alignment will be covered in a supplementary booklet.

Operation

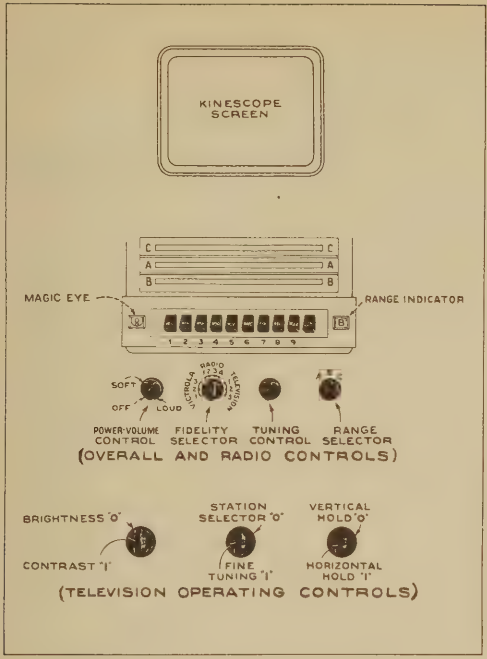


Figure 1—Operating Controls, TRK-9

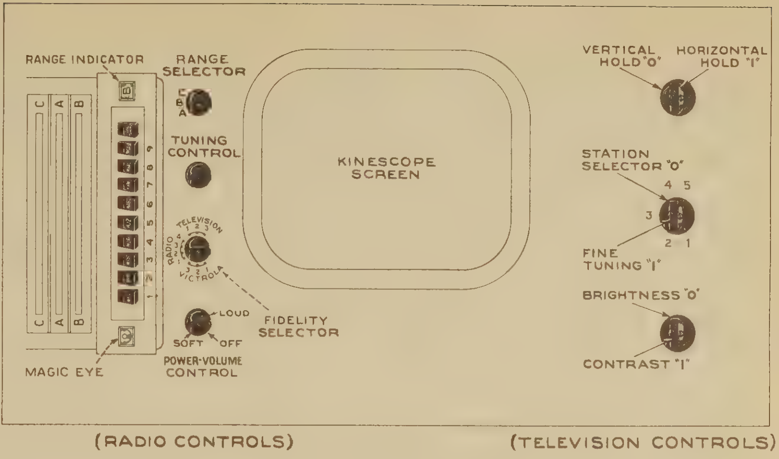


Figure 2—Operating Controls, TRK-12

The "Power-Volume" control on the radio receiver turns on the power for the complete receiver. The "Victrola, Radio, Television" control selects the type of operation desired. There are three Victrola fidelity positions, four radio fidelity positions and three Television sound fidelity positions on this switch. The furthermost clockwise position being the highest fidelity position for Television sound.

Television Operation:

Station Selector and Fine Tuning.—The outer ring "O" section of the central dual control knob on the Television panel selects the station from which it is desired to receive television transmissions.

Five television channels are covered as follows:

(1) 84 to 90 mc.
(2) 78 to 84 mc.
(3) 66 to 72 mc.
(4) 50 to 56 mc.
(5) 44 to 50 mc.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television broadcasts.

The inner section "I" of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals. A slight downward pressure must be exerted on the knob while turning.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

Contrast and Brightness Controls.—The inner "I" section of the "Contrast"-"Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too much contrast gives blurred details and a lack of half-tones, while too little contrast makes it all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Operating Instructions for this receiver.

The outer ring "O" is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Operating Instructions for this receiver.

An approximate adjustment for proper contrast is to turn the "Contrast" control fully counter-clockwise, then turn the "Brightness" control until the screen is slightly illuminated. Then reduce the Brightness control just sufficient to make the screen dark, then bring up the Contrast Control until the picture appears. A slight further adjustment of the Brightness or Contrast control may be necessary in some cases.

Hold Controls.—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a "I" is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See Operating Instructions for this receiver.

The outer ring section designated by "O" is the vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An occasional resetting may be necessary due to changing to a different station, and to the gradual aging of the tubes.

SERVICE DATA

Kinescope Installation (TRK-9).

1. Remove back cover of cabinet.
2. Remove the two screws which secure the wooden block, on which the yoke is mounted, to the upper shelf, and drop this block and yoke away from the shelf.
3. Loosen the thumb screw in the center of the slotted block of wood on the top shelf, pull this block of wood towards the rear of the cabinet and turn it so that the "V" slot on the front end of the block is to your right.
4. Wearing gloves and goggles, carefully slide the Kinescope on the "V" in the block, and turn both the block and the Kinescope so that the Kinescope faces the viewing window. Slide the Kinescope up to the mask in the window and fasten loosely in place by sliding the "V" block up to the bottom of the Kinescope face, and fastening it with the thumb screw.
5. Place the yoke and the wooden block on which it is mounted, on the Kinescope neck, rotate the block 90° from its original mounting position in order to have it clear the top of the cabinet and slide it into position on the Kinescope neck. DO NOT FORCE YOKE. In some cases where the yoke lead is too short it may be necessary to loosen the "V" block and swing the Kinescope neck to the left in order to be able to place the yoke on the Kinescope neck without forcing.
6. Fit the upper part of the wooden yoke mounting block into the slot on the underside of the cabinet top and fasten the lower end of the block securely by means of the two screws. The Kinescope should be mounted loosely in place, so that the yoke is not forced on the Kinescope neck at any time.

7. Loosen the wing nuts on the yoke mounting bracket, and move the yoke forward on the neck of the Kinescope so that it pushes the Kinescope against the mask. Tighten the wing nuts to hold the Kinescope and yoke securely in this position.

8. It may be necessary to rotate the Kinescope, within the limits allowed by the high voltage second anode lead, with respect to the mask in order to obtain proper masking of the edges on the Kinescope screen. Before rotating the Kinescope, the screws holding the yoke mounting block should be loosened, so that the Kinescope neck will not be forced.

9. Move the "V" block forward so that it holds the bottom of the Kinescope in place. Tighten the thumb screw.

10. Place the second anode lead on the second anode cap at the side of the Kinescope.

11. After the receiver is operating, and if the picture is not squared with the mask, using a screw driver loosen the clamping screws on the band around the yoke and rotate the yoke until the picture is squared with the mask, then tighten these clamping screws securely.

CAUTION: When removing the back cover of the cabinet, after the screws have been removed do not allow the cover to slide down on the neck of the Kinescope, or the neck of the Kinescope may be snapped off.

Kinescope Installation (TRK-12). Refer to figure 5.

1. Remove back cabinet cover.

2. Remove the top safety glass cover by removing the three wing nuts "E" at the two front corners and right rear corner of the cover and loosening the wing nut "E" at the left rear corner of the cover.

3. Lift the cover straight upwards, taking care not to scratch the cabinet finish with the protruding screws or the cover itself.

4. Loosen the two wing nuts "F" on the yoke holding frame, and allow the yoke to drop down as far as possible.

5. Using gloves and goggles, open the Kinescope shipping carton and remove the top cover on the Kinescope.

6. Remove the Kinescope from the shipping carton (do not remove the close fitting cardboard shield from the Kinescope), and insert the Kinescope into the cabinet, guiding the neck of the Kinescope into the yoke. Do not force the neck of the Kinescope into the yoke, as the tube is likely to break. Let the Kinescope down slowly so that it finally rests on the yoke.

7. Rotate the Kinescope and cardboard container (but not the yoke), so that the second anode cap at the side of the tube is towards the front of the cabinet.

8. Place the white rubber mask on the face of the Kinescope, with the ribs on the mask facing upwards toward the mirror. Line up the mask so that it masks the edges on the Kinescope face. Then, if necessary, lift the Kinescope and rotate it so the mask is approximately squared up with the cover opening. The second anode cap should be kept towards the front of the cabinet.

9. Replace the safety glass cover and wing nuts. Tighten wing nuts to hold the cover securely.

10. Loosen the wing nuts "F" on the yoke mounting bracket and push the two metal brackets, on which the bottom of the yoke rests, upward, until the rubber mask rests against the top cover. If the mask and the cover opening do not line up, rotate the cone-shaped Kinescope shield until they do. Tighten the wing nuts to hold the yoke and tube in this position. In some cases it may be necessary to loosen the four screws holding the yoke support to the wooden frame and shift the yoke support to make the mask and Kinescope line up symmetrically with the cover opening.

11. Place the second anode lead on the second anode cap at the side of the Kinescope.

12. After the receiver is operating, and if the picture is not squared up with the cover opening, the two screws "H" on the band around the yoke should be loosened, and the yoke rotated to square up the picture, then these screws should be tightened with a screw driver.

Focusing Control.—On early production receivers a knob located on the bottom rear of the cabinet is the "Focus" control. On later production receivers this has been changed to a screw driver adjustment at the bottom of the right side of the cabinet.

Adjustments.—There are a series of screw driver slot adjustments at the rear of the TRK-12 (at the side of the TRK-9), used to obtain the proper picture size, centering, and vertical distribution. These adjustments are explained fully in the receiver operating instructions, and also in the booklet: "Practical Television by RCA."

When the receiver is moved from one location to another some readjustment of these controls may be necessary.

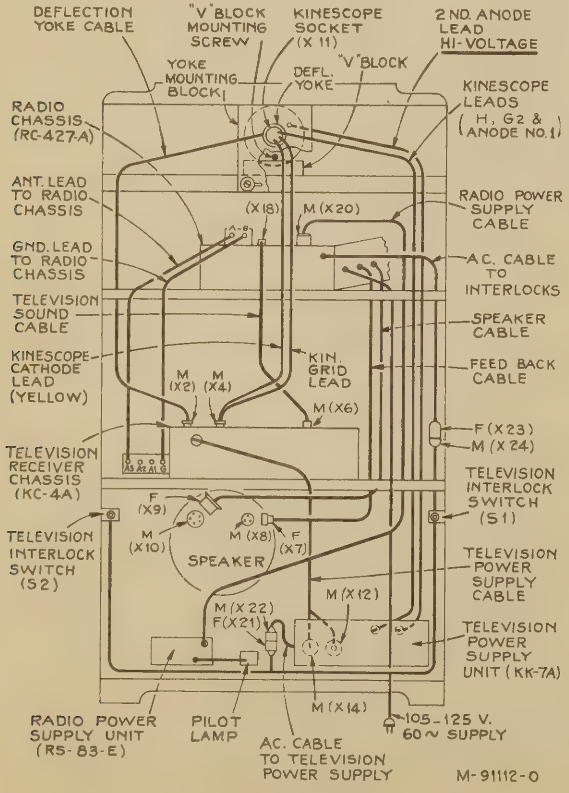


Figure 3—Cabinet Wiring—Model TRK-9

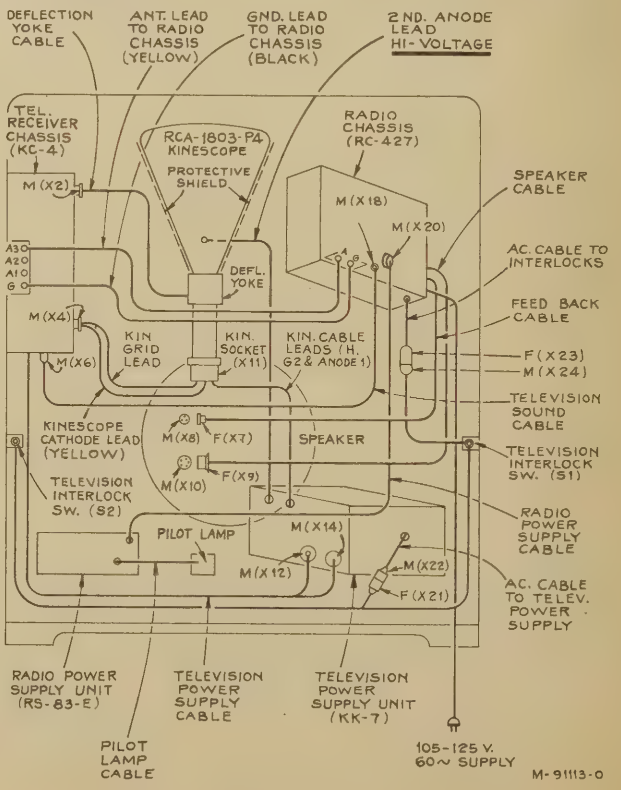


Figure 3a—Cabinet Wiring—Model TRK-12

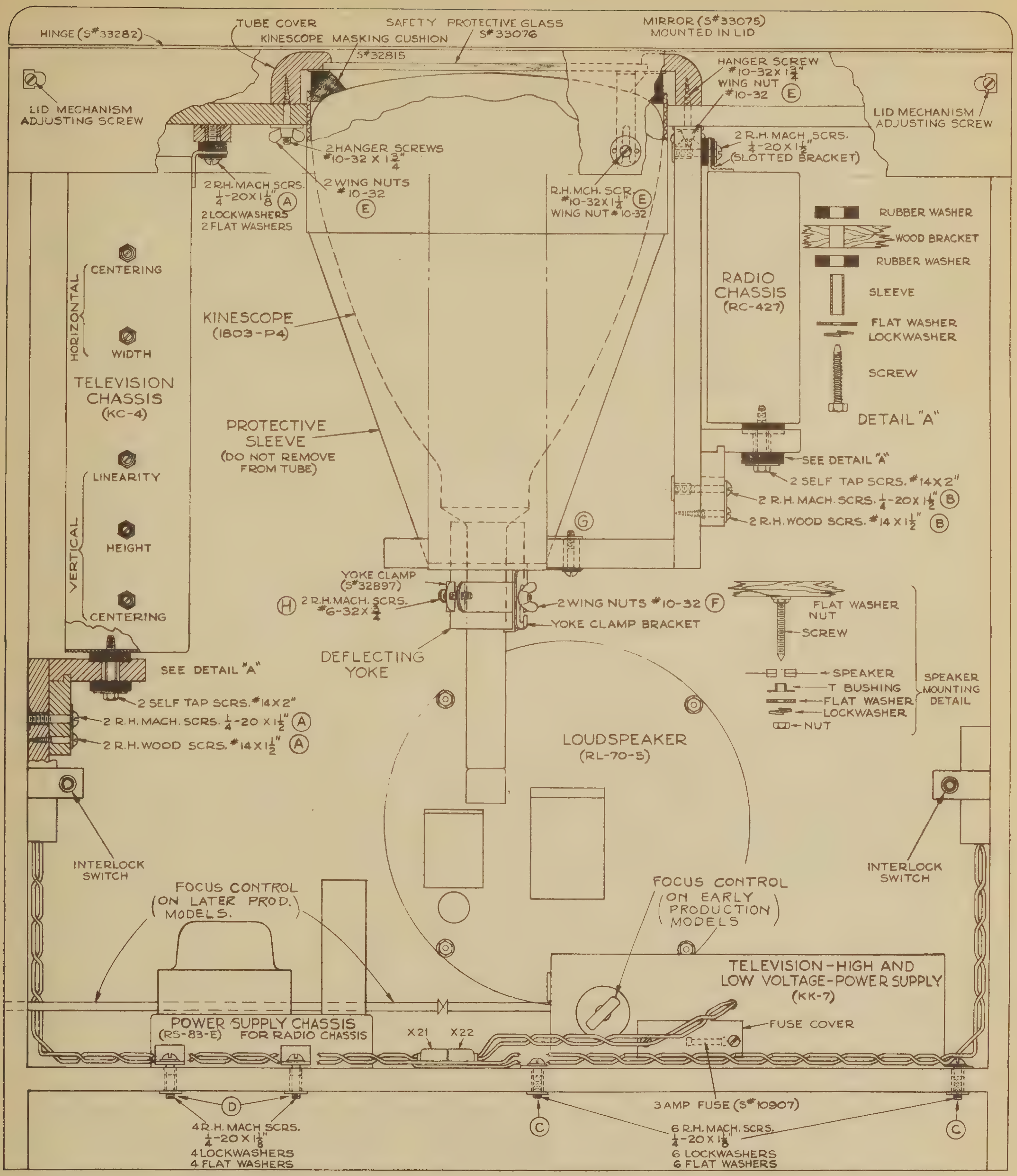
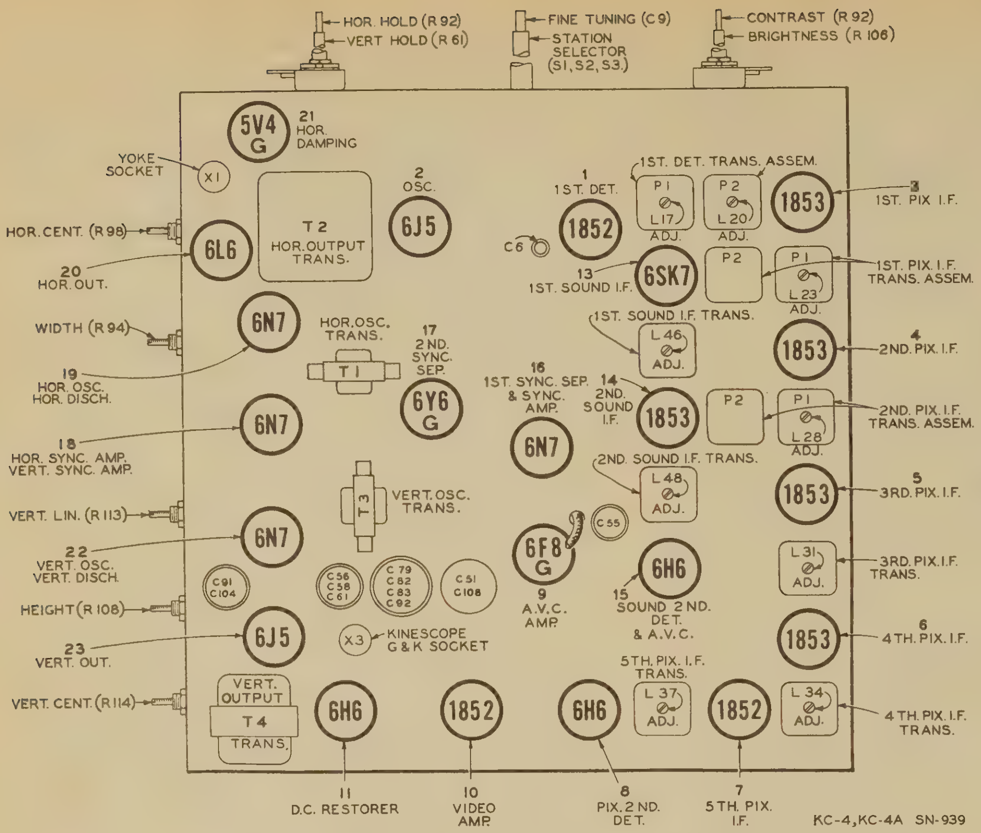
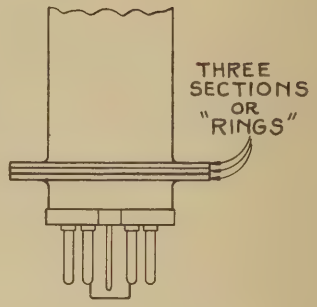

HINGE (S#33282)
TUBE COVER
KINESCOPE MASKING CUSHION
S#32815
SAFETY PROTECTIVE GLASS S#33076
MIRROR (S#33075) MOUNTED IN LID
HANGER SCREW #10-32 X 1¾" WING NUT #10-32 Ⓔ
LID MECHANISM ADJUSTING SCREW
LID MECHANISM ADJUSTING SCREW
2 HANGER SCREWS #10-32 X 1¾"
2 R.H. MACH SCRS. ¼-20 X 1½" (SLOTTED BRACKET)
2 R.H. MACH SCRS. ¼-20 X 1⅛" Ⓐ 2 LOCKWASHERS 2 FLAT WASHERS
2 WING NUTS #10-32 Ⓔ
R.H. MCH. SCR. #10-32 X 1¼" Ⓔ WING NUT #10-32
RUBBER WASHER
WOOD BRACKET
RUBBER WASHER
SLEEVE
FLAT WASHER
LOCKWASHER
SCREW
DETAIL "A"
RADIO CHASSIS (RC-427)
HORIZONTAL
CENTERING
WIDTH
KINESCOPE (1803-P4)
TELEVISION CHASSIS (KC-4)
PROTECTIVE SLEEVE (DO NOT REMOVE FROM TUBE)
VERTICAL
LINEARITY
HEIGHT
CENTERING
SEE DETAIL "A"
2 SELF TAP SCRS. #14 X 2"
2 R.H. MACH. SCRS. ¼-20 X 1½" Ⓑ
2 R.H. WOOD SCRS. #14 X 1½" Ⓑ
Ⓖ
YOKE CLAMP (S#32897)
Ⓗ 2 R.H. MACH. SCRS. #6-32 X ¾
2 WING NUTS #10-32 Ⓕ
YOKE CLAMP BRACKET
FLAT WASHER
NUT
SCREW
SPEAKER
T BUSHING
FLAT WASHER
LOCKWASHER
NUT
SPEAKER MOUNTING DETAIL
DEFLECTING YOKE
SEE DETAIL "A"
2 SELF TAP SCRS. #14 X 2"
2 R.H. MACH. SCRS. ¼-20 X 1½" Ⓐ
2 R.H. WOOD SCRS. #14 X 1½" Ⓐ
LOUDSPEAKER (RL-70-5)
INTERLOCK SWITCH
INTERLOCK SWITCH
FOCUS CONTROL (ON LATER PROD. MODELS.)
FOCUS CONTROL (ON EARLY PRODUCTION MODELS)
TELEVISION-HIGH AND LOW VOLTAGE-POWER SUPPLY (KK-7)
FUSE COVER
POWER SUPPLY CHASSIS (RS-83-E) FOR RADIO CHASSIS
X21
X22
Ⓓ
4 R.H. MACH. SCRS. ¼-20 X 1⅛" 4 LOCKWASHERS 4 FLAT WASHERS
Ⓒ
3 AMP FUSE (S#10907)
6 R.H. MACH. SCRS. ¼-20 X 1⅛" 6 LOCKWASHERS 6 FLAT WASHERS
Ⓒ

Figure 4—TRK-12 Assembly



At Left—Figure 5
Top View Video Chassis



(Above) Figure 6
Recommended Type
6L6 Identification

Video Chassis KC-4, KC4A

When it is desired to measure any voltages on this chassis, the primary leads of the high voltage transformer T6 should be disconnected and taped together.

When any changes have to be made in the Video chassis, the lead and part locations should be replaced as closely as possible to the original positions.

Service Hints:

1. In some cases the horizontal sweep oscillator circuit will radiate energy to nearby broadcast receiving antennas and lead-ins, causing interference with standard broadcast receivers. It has been found that this trouble has been cleared up in some cases by use of an RCA "Magic Wave" antenna for the broadcast receiver receiving the interference.

2. Poor Horizontal Distribution of the picture elements may be due to a 6L6 tube. RCA-6L6 tubes of known recent manufacture are the only tubes recommended for the Horizontal sweep output circuit. By careful scrutiny, these tubes can be identified by the three "rings" or sections welded together at the base ring of the tube, as shown in Figure 6. If any other 6L6 tube is used in this position it will break down in a very short time.

3. If the picture "tears out" when the receiver is jarred it may be due to microphonic 1852, 1853 or 6J5 tubes.

4. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the motion may cause the 80.5 mmf capacitor to break off.

5. The coils in oscillator circuit should not be touched or moved or the alignment of the receiver will be disturbed.

6. The insulator on the filter capacitors may become dirty and break down to short out the high voltage.

7. The Video coupling capacitors C50, 53, 59 should be kept clear of chassis.

8. A gassy 2V3-G tube may cause resistor R-137 to burn. Replace 2V3-G tube, and resistor, if necessary.

Socket Power Units KK7, KK7A

No attempt should ever be made to measure the high (7,500 volts) voltage because of the difficulties and dangers involved. If, at any time it becomes necessary to service the SPU, the suspected parts should be replaced by parts known to be in good operating condition.

These precautions should be observed when any work on the SPU is being done:

1. Remove power supply cord from the power supply socket.

2. Use only one hand at a time. It is advisable to keep the other hand in one's pocket.

3. Connect a shorting lead between ground (first) and the high voltage side of C-114.

4. Whenever working with the oil-filled capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.

5. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

Antenna

The finest television receiver built may be said to be only as good as the antenna design and installation. It is therefore important to use a correctly designed antenna, and use care in its installation.

The RCA Double Dipole Antenna, Stock No. 9871, is recommended for use with these receivers. Both this antenna and the "V" antenna described below are especially designed for a sufficient broad frequency response to cover the contemplated television spectrum with good efficiency and are therefore superior to a single Dipole type antenna.

When greater signal pickup, or where a shielding effect from noise sources or image reflections are desired, a reflector assembly, Stock No. 9872, may be added to the Stock No. 9871 Antenna to obtain an improved signal-to-noise ratio.

The RCA Double "V" Wire Type Television Antenna is an alternative type of antenna designed for television sight and sound reception. Two points of support are necessary. It serves adequately in suburban areas, but may not be sufficiently flexible in congested city areas where bad reflections and interference are encountered.

Antenna Installation.

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception.

Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals and doctors' offices and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference spoiling the picture.

In mounting any antenna, care must be taken to keep the antenna rods or pickup wires proper at least ¼ wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects. Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

(3) It must be continually remembered that the discernment for the eye is much more critical than that of the ear.

For further information on antennas and antenna installation see RCA Booklet entitled: **"Practical Television by RCA,"** and also the specific instructions accompanying the RCA Television Antenna.

Transmission Line

RCA Victor has made available two types of exterior transmission lines. One is a special low loss weather-proofed line having the correct surge impedance to match the RCA Victor Television antennas and the RCA Victor Television receivers. It is carried as Stock No. 9882 in 1,000-foot rolls. The second type is a standard weather-proofed line, also having the correct surge impedance for proper antenna and receiver matching. It is carried as Stock No. 12430 in 90-foot rolls, Stock No. 12429 in 45-foot rolls and is available in 1,000-foot spools as Stock No. 9881. Use of improper lines may result in excessive loss or may lead to line reflections, resulting in multiple images or "ghosts," thus marring the reception.

For transmission line runs up to 200 feet, and where the signal strength on the antenna is relatively high, the Stock No. 12430, or Stock No. 12429 transmission line may be used. For all other applications the Stock No. 9882 transmission line is recommended.

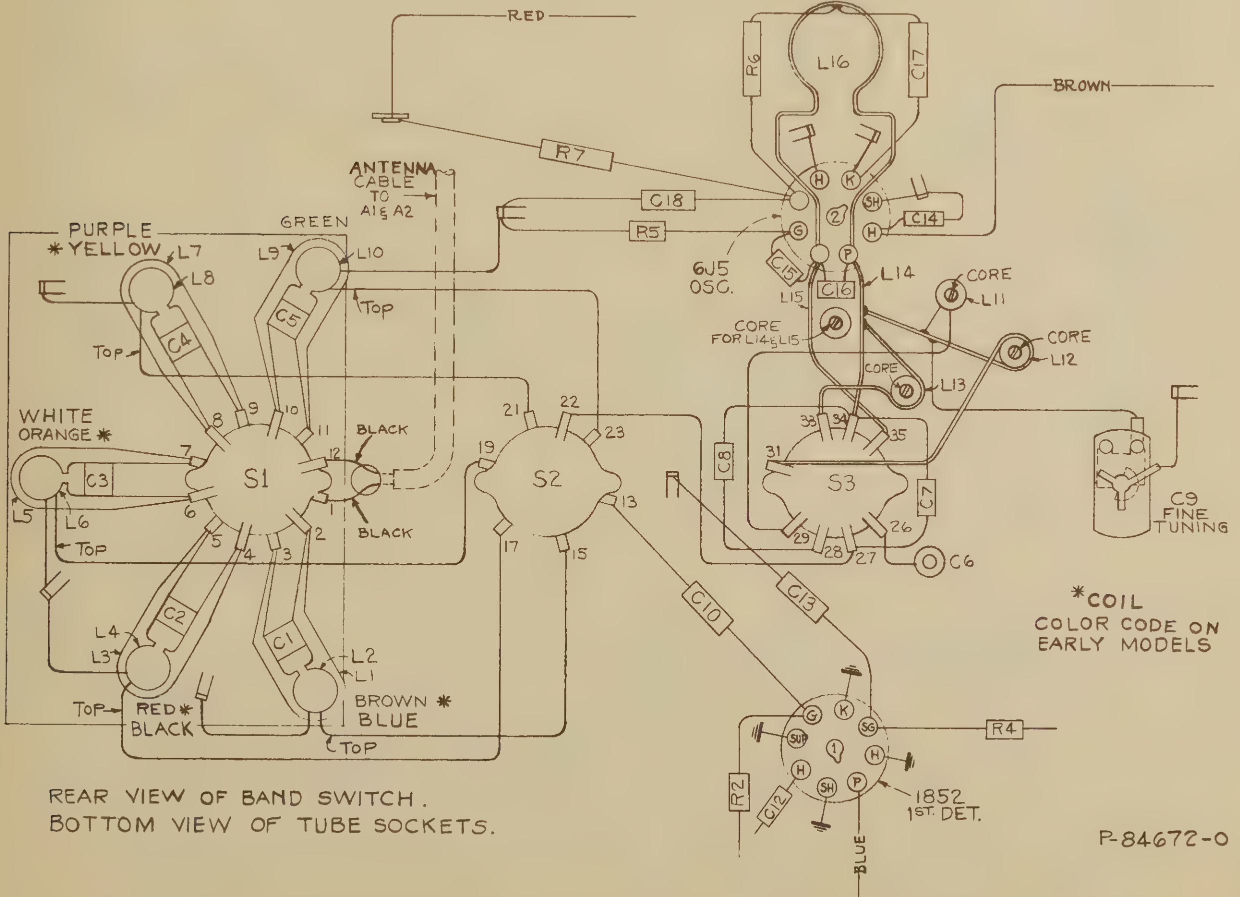
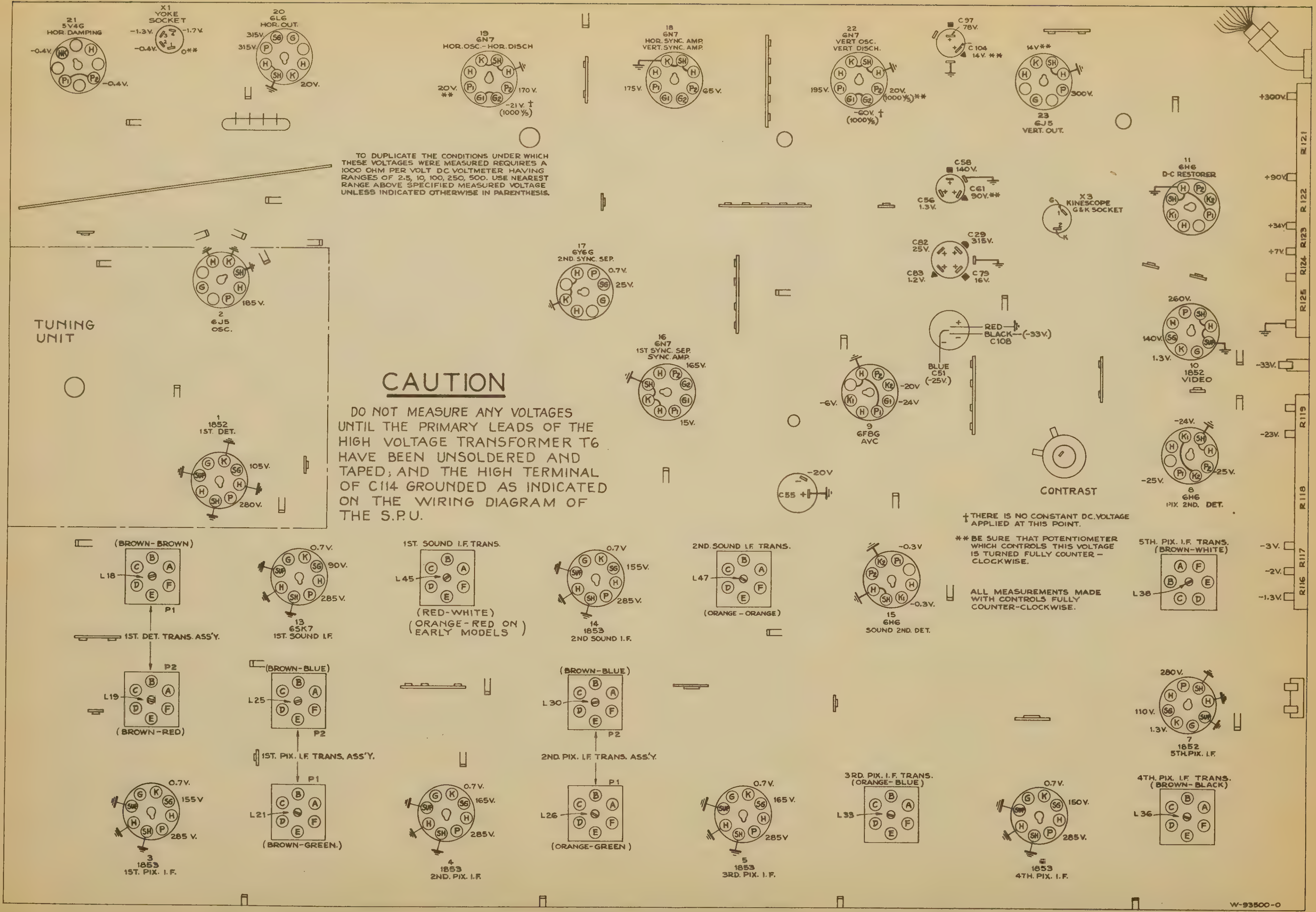


Figure 7—R. F. Unit Wiring



TO DUPLICATE THE CONDITIONS UNDER WHICH THESE VOLTAGES WERE MEASURED REQUIRES A 1000 OHM PER VOLT DC VOLTMETER HAVING RANGES OF 2.5, 10, 100, 250, 500. USE NEAREST RANGE ABOVE SPECIFIED MEASURED VOLTAGE UNLESS INDICATED OTHERWISE IN PARENTHESIS.

CAUTION

DO NOT MEASURE ANY VOLTAGES UNTIL THE PRIMARY LEADS OF THE HIGH VOLTAGE TRANSFORMER T6 HAVE BEEN UNSOLDERED AND TAPED; AND THE HIGH TERMINAL OF C114 GROUNDED AS INDICATED ON THE WIRING DIAGRAM OF THE S.P.U.

† THERE IS NO CONSTANT DC. VOLTAGE APPLIED AT THIS POINT.

** BE SURE THAT POTENTIOMETER WHICH CONTROLS THIS VOLTAGE IS TURNED FULLY COUNTER-CLOCKWISE.

ALL MEASUREMENTS MADE WITH CONTROLS FULLY COUNTER-CLOCKWISE.

BOTTOM VIEW

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and all controls and adjustments full counter-clockwise. Values should hold within ±20% with 117-volt a-c supply.

Figure 8—Voltage Diagram

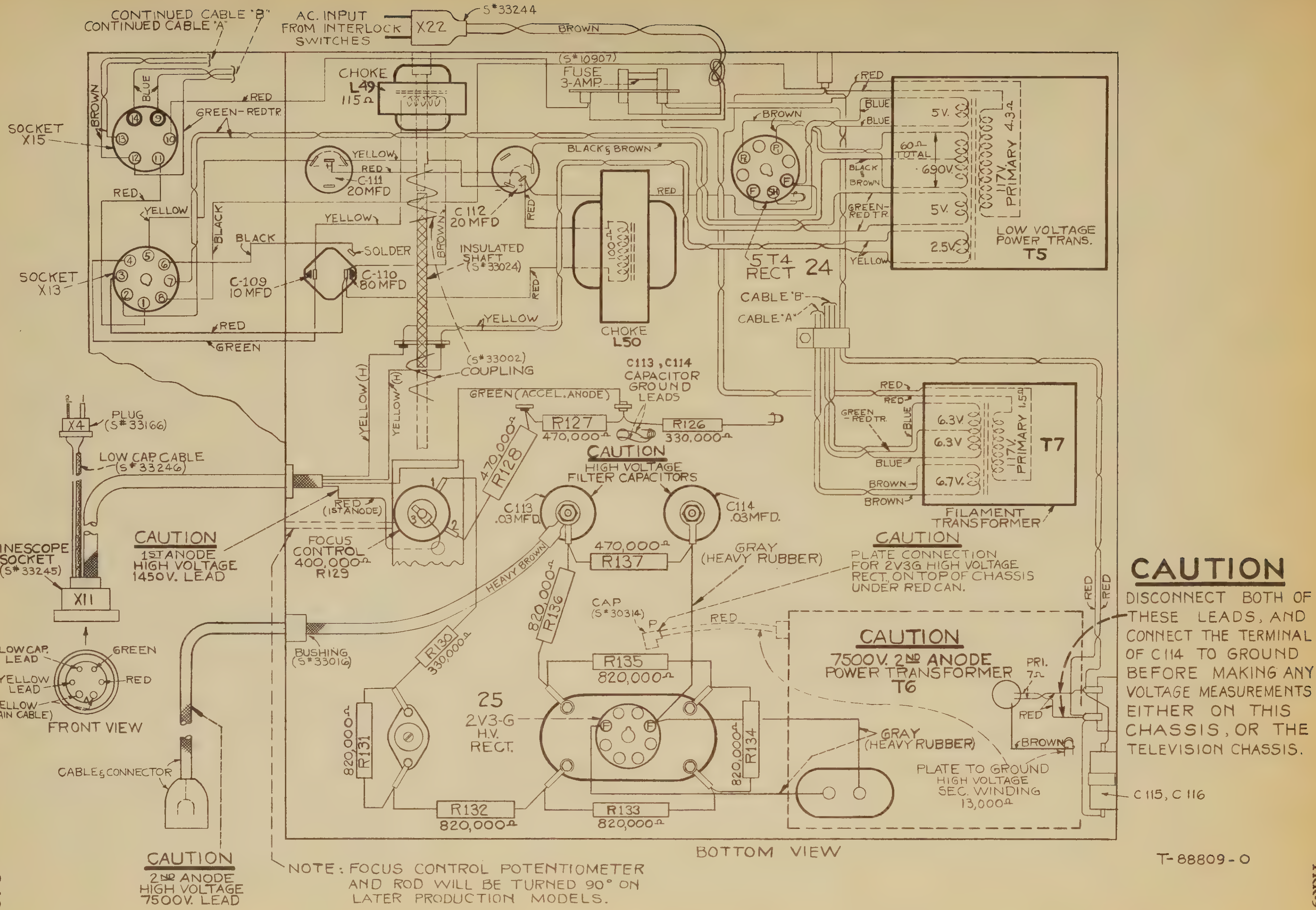


Figure 11—SPU Wiring

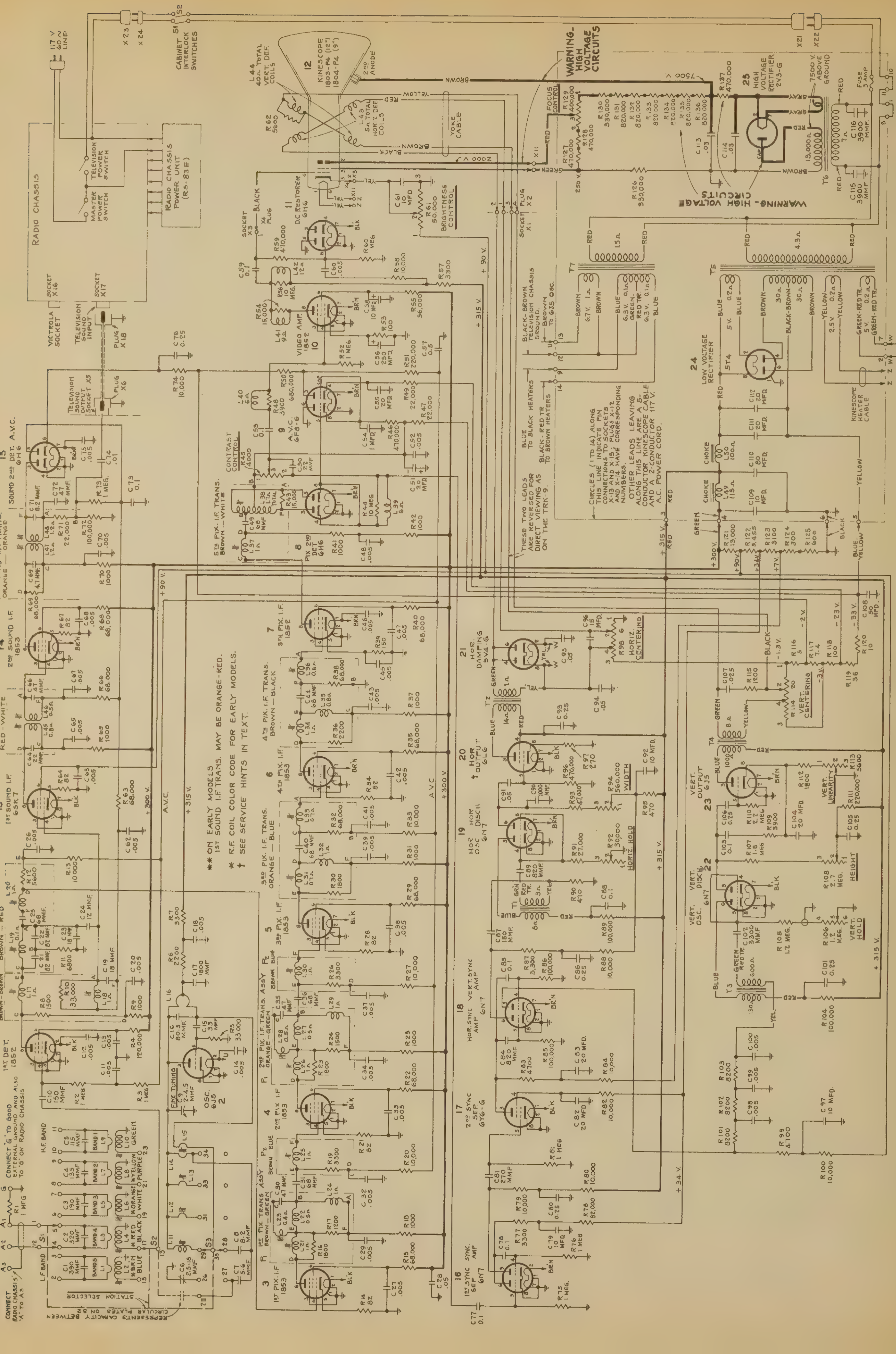

117 V. 60~ LINE
CABINET S1 INTERLOCK SWITCHES
RADIO CHASSIS
MASTER POWER SWITCH
TELEVISION POWER SWITCH
RADIO CHASSIS POWER UNIT (RS-83E)
VICTROLA SOCKET X16
TELEVISION SOUND INPUT SOCKET X17
PLUG X18
TELEVISION SOUND OUTPUT SOCKET X5
PLUG X6
L44 40Ω TOTAL VERT. DEF. COILS
12 KINESCOPE 1803-P4 (12") 1804-P4 (5")
2ND ANODE
L43 5Ω TOTAL HORIZ DEF. COILS
R62 5600
YOKE CABLE
WARNING-HIGH VOLTAGE CIRCUITS
FOCUS CONTROL R129 400,000
25 HIGH VOLTAGE RECTIFIER 2V3-G
7500 V. ABOVE GROUND
FUSE .3 AMP
POWER UNIT INTERLOCKS
W-302269-2
11 D.C. RESTORER 6H6
R61 50,000 BRIGHTNESS CONTROL
10 VIDEO AMP. 1852
9 A.V.C. 6F8-G
CONTRAST CONTROL R45 4000
8 PIX 2ND DET 6H6
15 SOUND 2ND DET. A.V.C. 6H6
14 2ND SOUND I.F. 1853
13 1ST SOUND I.F. 6SK7
1 1ST DET. 1852
2 OSC. 6J5
FINE TUNING
STATION SELECTOR
3 1ST PIX I.F. 1853
4 2ND PIX I.F. 1853
5 3RD PIX I.F. 1853
6 4TH PIX I.F. 1853
7 5TH PIX I.F. 1852
16 1ST SYNC SEP. 6N7
17 2ND SYNC SEP. 6Y6-G
18 HOR. SYNC AMP VERT. SYNC AMP 6N7
19 HOR OSC HOR DISCH 6N7
20 HOR OUTPUT 6L6
21 HOR DAMPING 5V4-G
22 VERT. OSC. VERT. DISCH 6N7
23 VERT. OUTPUT 6J5
24 LOW VOLTAGE RECTIFIER 5T4
HORIZ. HOLD
WIDTH
HORIZ. CENTERING
VERT. CENTERING
VERT. HOLD
HEIGHT
VERT. LINEARITY
KINESCOPE HEATER CABLE
** ON EARLY MODELS 1ST SOUND I.F. TRANS. MAY BE ORANGE-RED.
* R.F. COIL COLOR CODE FOR EARLY MODELS.
† SEE SERVICE HINTS IN TEXT.
CIRCLES (1 TO 14) ALONG THIS LINE INDICATE PIN CONNECTIONS TO SOCKETS X-3 AND X-13, PLUGS X-12 AND X-14 HAVE CORRESPONDING NUMBERS.
OTHER LEADS LEAVING ALONG THIS LINE ARE A 5-CONDUCTOR KINESCOPE CABLE AND A 2-CONDUCTOR 117 V. A.C. POWER CORD.
THESE TWO LEADS ARE REVERSED FOR DIRECT VIEWING AS ON THE TRK-9.
BLACK-BROWN TELEVISION CHASSIS GROUND.
BLUE TO BLACK HEATERS
BLACK-RED TR. TO BROWN HEATERS
CONNECT "G" TO GOOD EXTERNAL GROUND AND ALSO TO "G" ON RADIO CHASSIS
CONNECT RADIO CHASSIS "X" TO A3
REPRESENTS CAPACITY BETWEEN CIRCULAR PLATES ON S2
© RCA MFG. CO., INC.

Figure 9—Schematic Diagram, TRK-9 and TRK-12

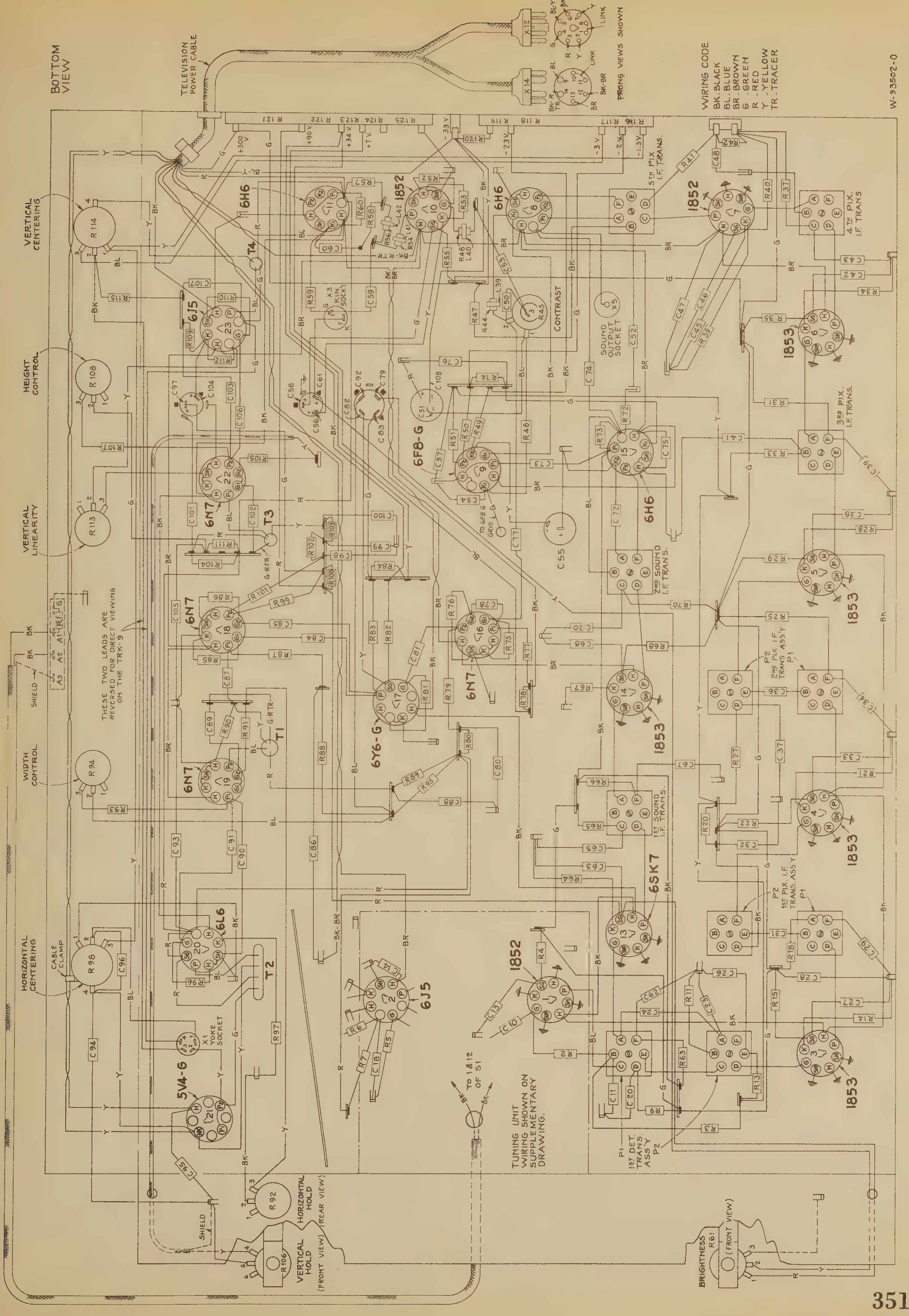


Figure 10—Video Chassis Wiring

Radio Receiver Chassis No. RC-427, RC-427A and Socket Power Unit No. RS-83E

Twelve-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receiver

Electrical Specifications

FREQUENCY RANGES	
Standard Broadcast ("A" band)	540-1,720 kc
Medium Wave ("B" band)	2.3-7.0 mc
Short Wave ("C" band)	7.0-22 mc

Intermediate Frequency	455 kc

TUBE COMPLEMENT		
(1)	RCA-6K7	R-F Amplifier
(2)	RCA-6A8	1st Detector
(3)	RCA-6J7	Oscillator
(4)	RCA-6K7	1st I-F Amplifier
(5)	RCA-6K7	2nd I-F Amplifier
(6)	RCA-6R7	2nd—Det., A.F., A.V.C., and Muting
(7)	RCA-6J5	2nd A-F Amplifier
(8)	RCA-6J5	Phase Inverter
(9)	RCA-6F6	Power Output
(10)	RCA-6F6	Power Output
(11)	RCA-6U5	Magic Eye
(12)	RCA-5U4G (In RS-83E SPU)	Full-Wave Rectifier

Dial Lamps	Two Mazda No. 44, 6.3 volts, .25 amp. One Mazda No. 47, 6.3 volts, .15 amp.

(The Mazda No. 47 is the electric tuning set-up lamp, located at center of dial.)

Power Supply Rating	105-125 volts, 60 cycles, 120 watts

POWER OUTPUT	
Undistorted	10 watts
Maximum	12 watts

LOUDSPEAKER (RL-70F-5)	
Type	12-inch electrodynamic
Voice-Coil Impedance	2.2 ohms at 400 cycles

Mechanical Specifications

RC-427 CHASSIS BASE DIMENSIONS	
Height	3 inches
Width	15½ inches
Depth	8½ inches
Overall Chassis Height	8½ inches
Tuning Drive Ratio	20 to 1

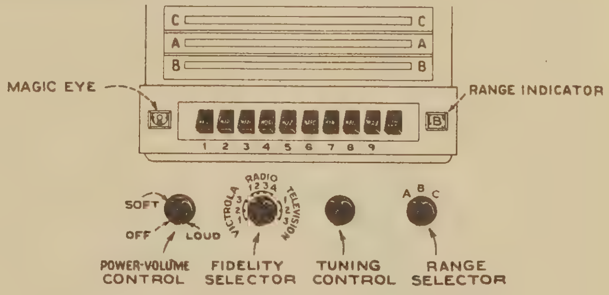
General Description

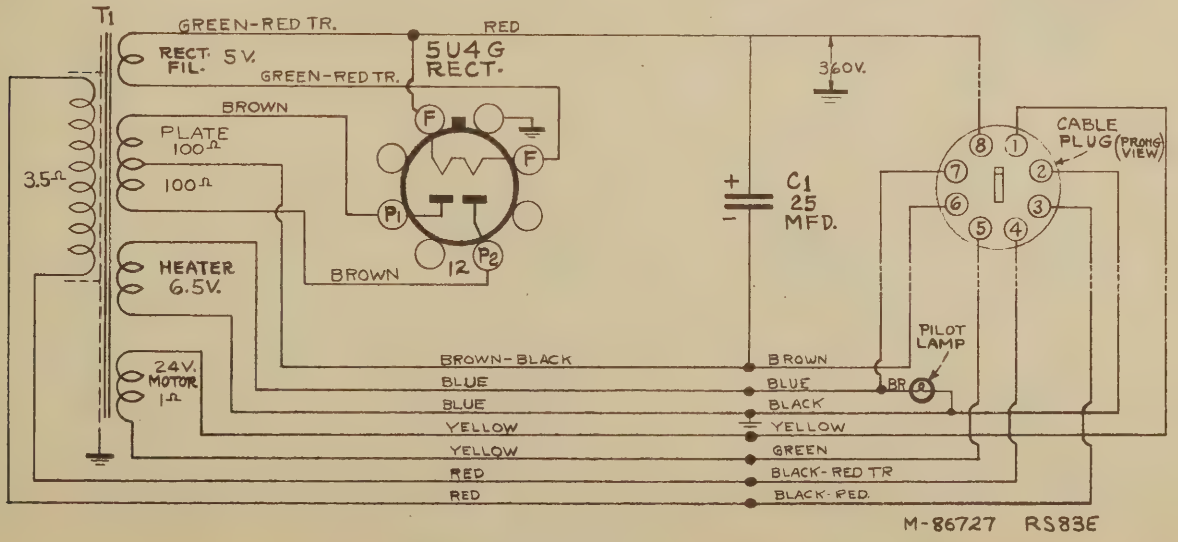
Radio receiver chassis No. RC-427 is used in RCA Victor Television Console Models TRK-9 and TRK-12.

The audio output of the television chassis is connected to the audio input of the radio chassis by means of jack X-17 and section S7 of the fidelity switch.

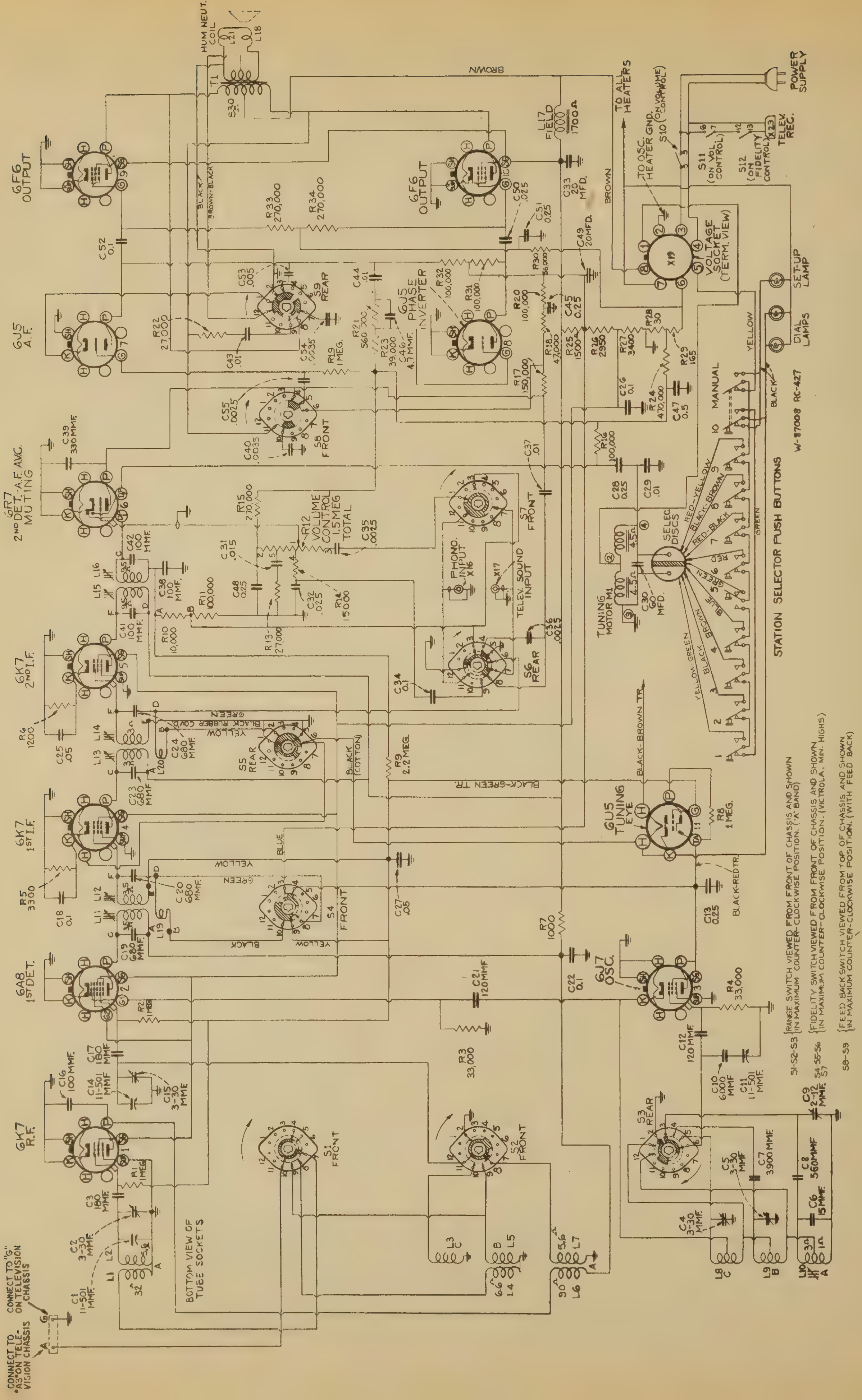
A separate plug-in power unit, RS-83E, is used to supply heater and plate voltages to the radio chassis. Service data and diagram for this power unit are shown below.

At Right—Location of Controls (Radio)





SPU Schematic Diagram, RS-83E

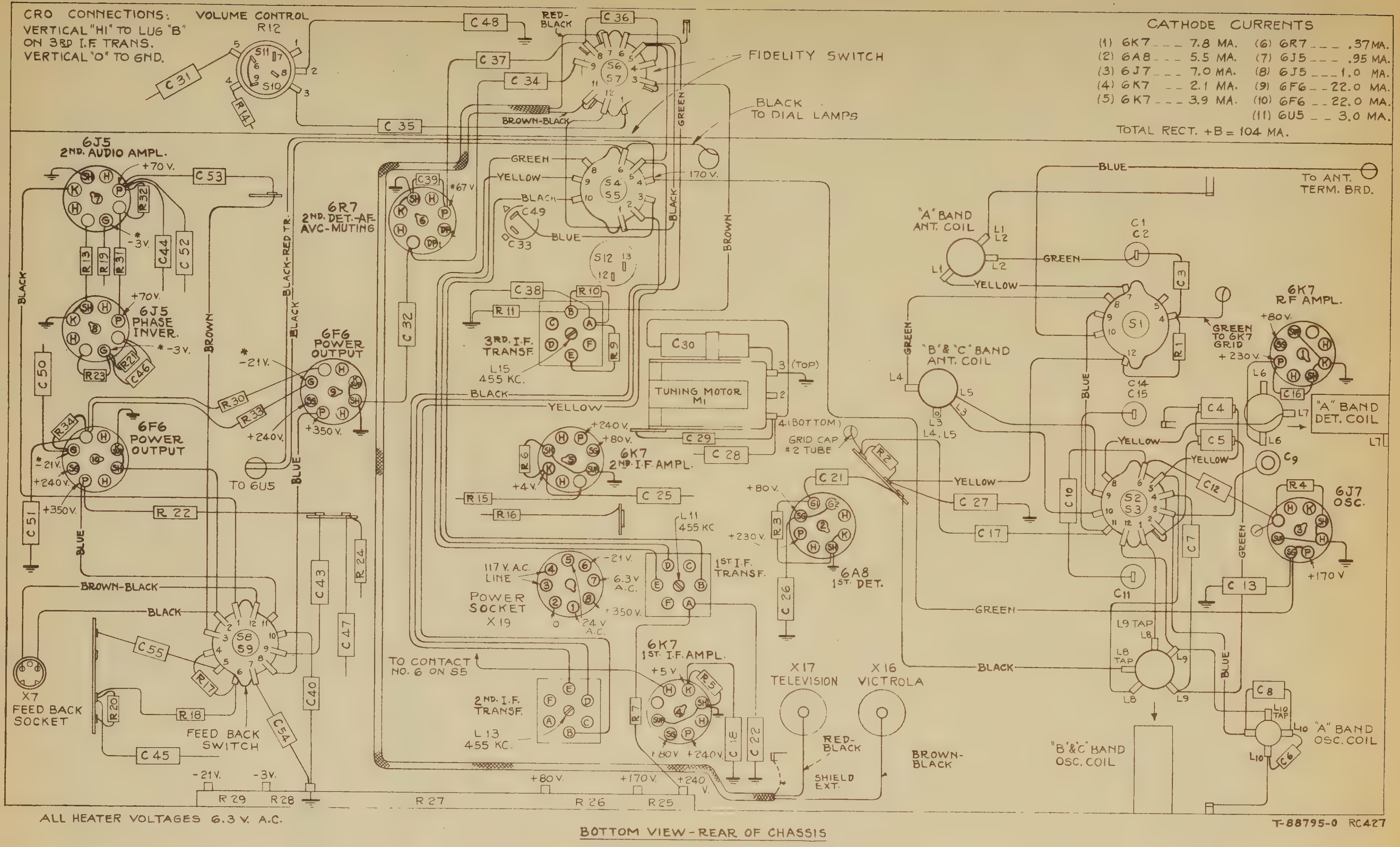


S1-S2-S3 {RANGE SWITCH VIEWED FROM FRONT OF CHASSIS AND SHOWN IN MAXIMUM COUNTER-CLOCKWISE POSITION. ("A" BAND)

S4-S5-S6 S7 {FIDELITY SWITCH VIEWED FROM FRONT OF CHASSIS AND SHOWN IN MAXIMUM COUNTER-CLOCKWISE POSITION. (VICTROLA, MIN. HIGHS)

S8-S9 {FEED BACK SWITCH VIEWED FROM TOP OF CHASSIS AND SHOWN IN MAXIMUM COUNTER-CLOCKWISE POSITION. (WITH FEED BACK)

Schematic Circuit Diagram, Radio Chassis



R-F Wiring Diagram and Socket Voltages (Radio Chassis)

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

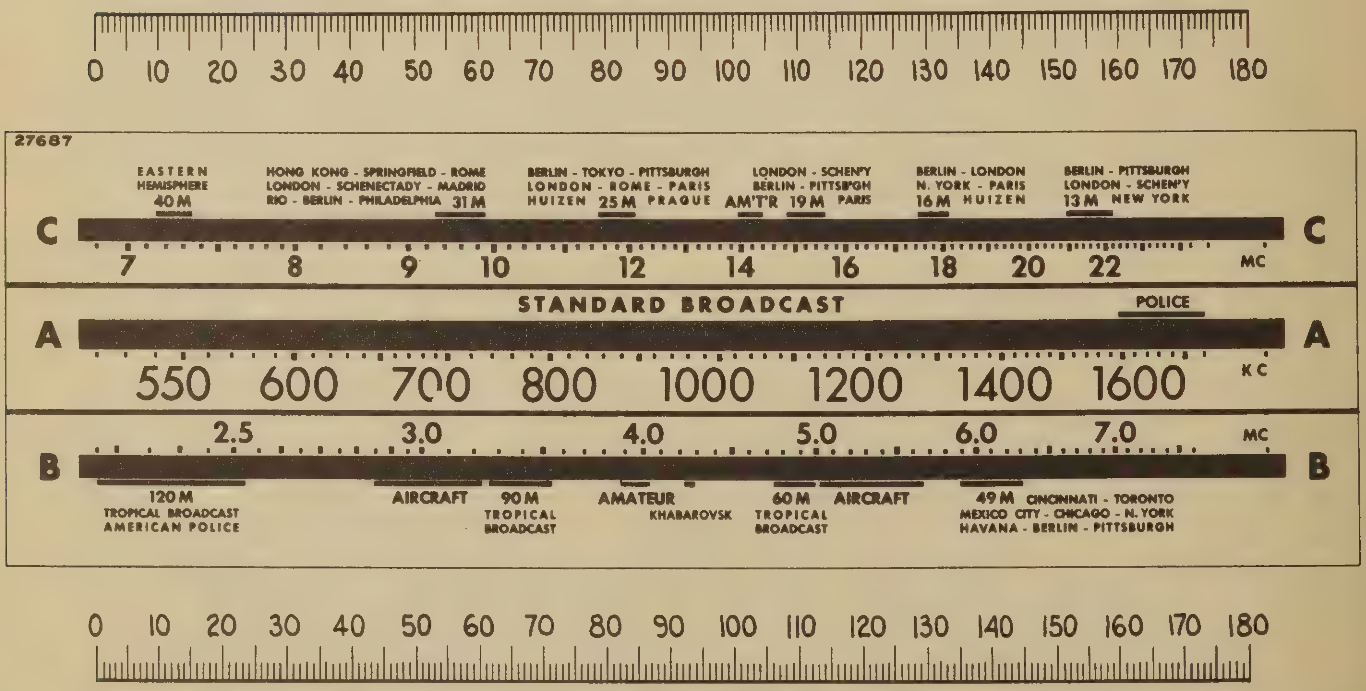
***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Fidelity Switch (S4, S5, S6, S7)

Switch Position	For	I-F Amp.	Audio Amp.	110-V. Supply for Tele. Chassis *	Magic Eye	Osc. and Eye +B Supply	Dial Lamps **
No. 1 (Counter-clockwise)	Victrola	—	Min. Highs	Off	—	Off	On
No. 2	Victrola	—	Max. Highs Reduced Lows	Off	—	Off	On
No. 3	Victrola	—	Full Range	Off	—	Off	On
No. 1	Radio	Sharp	Min. Highs Max. Lows	Off	On	On	On
No. 2	Radio	Sharp	Max. Highs Reduced Lows	Off	On	On	On
No. 3	Radio	Sharp	Max. Highs Full Lows	Off	On	On	On
No. 4	Radio	Broad	Full Range	Off	On	On	On
No. 1	Television	—	Min. Highs	On	Off	Off	Off
No. 2	Television	—	Med. Highs Reduced Lows	On	Off	Off	Off
No. 3	Television	—	Full Range	On	Off	Off	Off

* Controlled by switch (S12) on rear of fidelity switch.
** The 1st-I.F. heater is opened on positions 8, 9, and 10.

Calibration Scale



Tuning Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Alignment Procedure

(RADIO CHASSIS)

At Right—Tube and Trimmer Locations

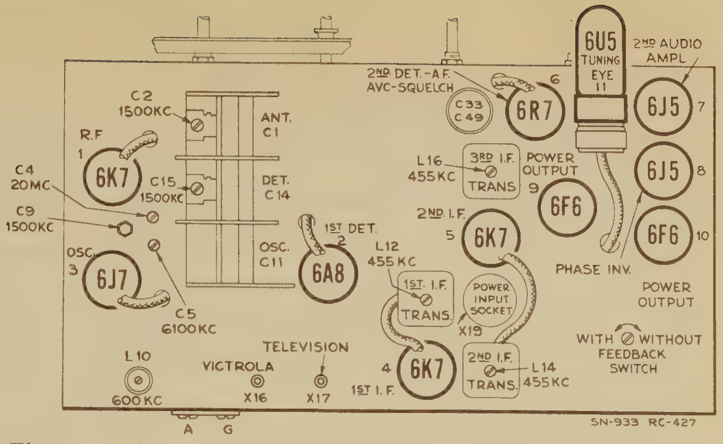
Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment. — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "O" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.



To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with O-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "O" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator approximately 1/16-inch above end dots at low-frequency ends of bands with gang condenser fully meshed. See that pointer does not rub background screen or dial face. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Set tuning gang to—	Adjust the following—	To obtain—
1	**Turn fidelity switch to No. 3 radio (sharp).**				
2	**6K7 2nd I-F grid cap, in series with .01 mfd.**	**455 kc**	**Quiet point on "B" band**	**L15, L16 (3rd I-F Trans.)**	**Coincidental images on cathode-ray oscillograph, or max. output on output meter.**
3	**6K7 1st I-F grid cap, in series with .01 mfd.**			**L13, L14 (2nd I-F Trans.)**	
4	**6A8 1st Det. grid cap, in series with .01 mfd.**			**L11, L12 (1st I-F Trans.)**	
5	**Turn fidelity switch to No. 4 radio (broad). The curve on CRO should broaden out to a double peak and reduce gain nearly 50%.**				
6	**Turn fidelity switch to No. 3 radio for the following adjustments. Back out the "B" and "C" oscillator trimmers, C5 and C4. Preset "A" band oscillator trimmer, C9, approximately an inch out.**				
7	**Antenna terminal, in series with 100 mmf.**	**600 kc**	**600 kc (31°) "A" band**	**L10 (osc.)**	**Max. Output**
8		**1,500 kc**	**1,500 kc (151°) "A" band**	**C9 (osc.) C2 (ant.) C15 (det.)**	**Max. Output**
9		**600 kc**	**600 kc "A" band**	**L10 (osc.)**	**Rock in for Max. Output**
10	**Repeat step No. 8.**				
11	**Antenna terminal, in series with 300 ohms**	**6,100 kc**	**6,100 kc (140°) "B" band**	**C5 (osc.)**	**Max. Output ***
12		**20 mc**	**20 mc (146°) "C" band**	**C4 (osc.)**	**Rock in for Max. Output ***
	Follow "Adjustments for Electric Tuning."				

* Use minimum capacitance peak if two peaks can be obtained.
Note: The oscillator tracks 455 kc above the signal on all bands.

Electric Tuning Mechanism

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

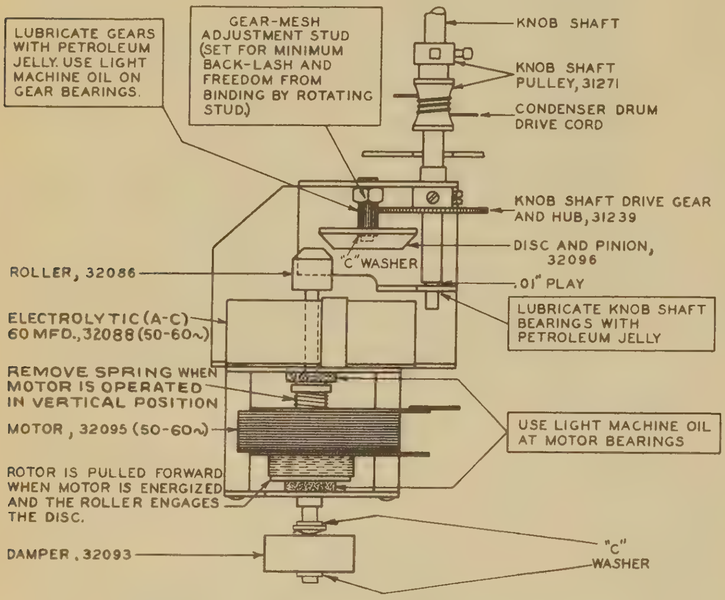
LUBRICATION

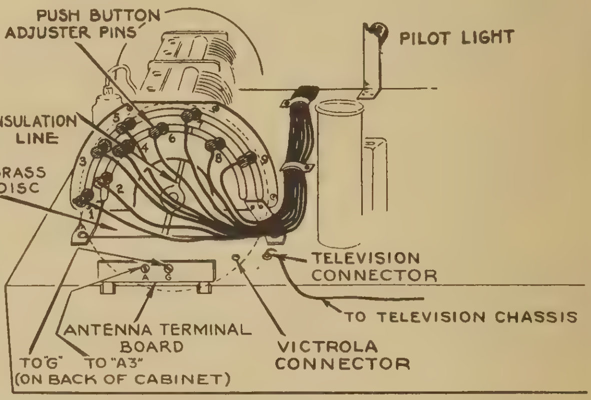
Motor bearings and **gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.


LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS.
GEAR-MESH ADJUSTMENT STUD (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUD.)
KNOB SHAFT
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD
KNOB SHAFT DRIVE GEAR AND HUB, 31239
DISC AND PINION, 32096
"C" WASHER
.01" PLAY
ROLLER, 32086
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ELECTROLYTIC (A-C) 60 MFD., 32088 (50-60~)
REMOVE SPRING WHEN MOTOR IS OPERATED IN VERTICAL POSITION
MOTOR, 32095 (50-60~)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ROLLER ENGAGES THE DISC.
DAMPER, 32093
"C" WASHER

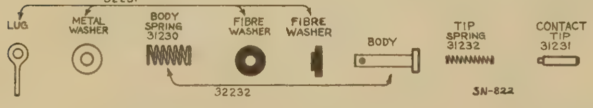


Station Button	Color of Lead To Station-Setting Contact	Station Button	Color of Lead To Station-Setting Contact
No. 1	Yellow-green	No. 6	Red
No. 2	Black	No. 7	Red-black
No. 3	Brown	No. 8	Brown-black
No. 4	Blue	No. 9	Red-yellow
No. 5	Green		

Adjustments for Electric Tuning

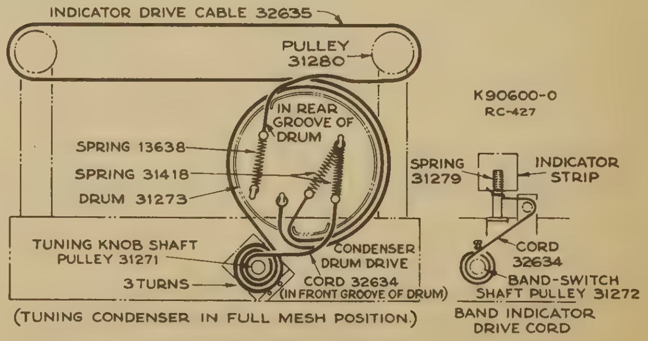
With power turned off, disconnect the antenna transmission line and ground connection, turn fidelity control to radio (3rd radio position—6th position from full counter-clockwise). Remove the back from the cabinet and reconnect the antenna transmission line and ground connection. The two interlock switches on the side panels should not be touched and care should be taken not to press on them when making the push-button set-up. Then turn on power, set range selector to "A," allow a few moments warm-up period and proceed as follows:

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn on power-volume control, turn range selector to "A" band, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button and press down station button No. 1 (left-hand). Both buttons will stay down. Move station adjuster contact pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out completely.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Tune to some other section on the dial, and then press down station button No. 1 again; the electric tuning mechanism will function to tune in the first station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.



Components of Station Setting Contact

At Right—Dial Mechanism


INDICATOR DRIVE CABLE 32635
PULLEY 31280
IN REAR GROOVE OF DRUM
SPRING 13638
SPRING 31418
DRUM 31273
TUNING KNOB SHAFT PULLEY 31271
3 TURNS
CONDENSER DRUM DRIVE CORD 32634 (IN FRONT GROOVE OF DRUM)
(TUNING CONDENSER IN FULL MESH POSITION)
K90600-0
RC-427
SPRING 31279
INDICATOR STRIP
CORD 32634
BAND-SWITCH SHAFT PULLEY 31272
BAND INDICATOR DRIVE CORD

Miscellaneous Data for Radio Chassis

Feedback Switch (S8 and S9)

Counter-clockwise position (with feedback)	Clockwise position (without feedback)
1. Provides inversed feedback by connecting part of secondary of output transformer in cathode of 6J5 2nd-audio tube.	1. Removes reversed feedback and grounds cathode of 2nd-audio tube.
2. Disconnects compensating network (R22, C43, C54, C40) from plate circuit of output tubes.	2. Connects compensating network (R22, C43, C54, C40) to plate circuit of output tubes.
3. Connects grid of 2nd audio to high side of 1st A-F plate resistor R17, for maximum input.	3. Connects grid of 2nd audio to low side of 1st A-F plate resistor R17, for reduced input.
4. Connects capacitor C53 (.005) from plate of 2nd audio to chassis.	4. Disconnects C53 from plate of 2nd audio.

Precautionary Lead Dress

(1) All A-C leads should be twisted together and dressed away from parts in chassis to prevent hum pickup.

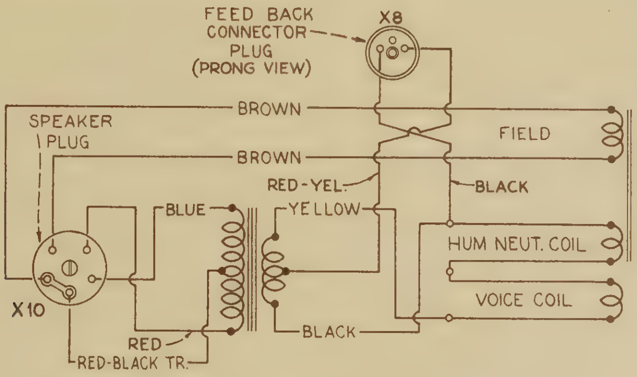
(2) Keep pilot light leads away from 6R7 grid.

(3) Yellow, green, and black leads from fidelity switch to 1st i-f transformer must be twisted together and dressed away from chassis.

(4) Yellow, green, and black leads from fidelity switch to 2nd i-f transformer must be twisted together and dressed away from chassis.

Victrola Attachment

A jack (X-16) is located near the antenna terminal board for convenience in plugging in a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.



Connections and Colors of Loudspeaker and Cable

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

TELEVISION CHASSIS ASSEMBLIES

KC-4 in TRK-12

KC-4A in TRK-9

STOCK No.	DESCRIPTION	
33387	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment (Used with L11, L12, L14, L15)	
33835	Adjuster—Magnetite core and stud in tube, for high frequency oscillator circuit adjustment (Used with L13)	
31253	Board—4 terminal antenna-ground terminal board	
12884	Capacitor—Adjustable plunger type air trimmer (C6)	
33097	Capacitor—4.7 mmfd., (neg. temp. coeff.) (C69)	
33478	Capacitor—5.6 mmfd., 500 volts (C7)	
33476	Capacitor—8.2 mmfd., 500 volts (C8)	
33381	Capacitor—8.2 mmfd. (neg. temp. coeff.) (C71)	
33380	Capacitor—12 mmfs., 500 volts (C24)	
33100	Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C19, C23)	
14021	Capacitor—22 mmfd. (C50)	
33101	Capacitor—22 mmfd. (neg. temp. coeff.) (C64)	
33111	Capacitor—33 mmfd., 500 volts (C15)	
33102	Capacitor—47 mmfd. (neg. temp. coeff.) (C30, C35, C66)	
33103	Capacitor—68 mmfd., 500 volts (C31, C36, C25, C40, C44, C49) (neg. temp. coeff)	
33477	Capacitor—80.5 mmfd., 500 volts (C16)	
33104	Capacitor—82 mmfd. (neg. temp. coeff.) (C21, C22)	
33106	Capacitor—115 mmfd. (C5)	
33107	Capacitor—135 mmfd. (C4)	
12725	Capacitor—150 mmfd., 400 volts (C10, C87)	
33108	Capacitor—190 mmfd. (C3)	
12488	Capacitor—270 mmfd. (C81)	
33109	Capacitor—320 mmfd. (C2)	
33110	Capacitor—390 mmfd. (C1)	
32788	Capacitor—820 mmfd., 400 volts (C84, C89)	
12635	Capacitor—1000 mmfd., 400 volts (C90)	
13580	Capacitor—1800 mmfd., 400 volts (C17)	
4881	Capacitor—3300 mmfd., 400 volts (C102)	
33584	Capacitor—.005 mfd., 1200 volts (C11, C12, C13, C14, C18, C20, C26, C27, C29, C32, C33, C34, C37, C38, C39, C41, C42, C43, C45, C46, C47, C48, C52, C60, C62, C63, C65, C67, C68, C70, C75, C98, C99, C100)	
4937	Capacitor—.01 mfd., 1000 volts (C74)	
4870	Capacitor—.025 mfd., 400 volts (C107)	
30882	Capacitor—.05 mfd., 200 volts (C94, C95)	
32787	Capacitor—.05 mfd., 400 volts (C28)	
4886	Capacitor—.05 mfd., 400 volts (C91)	
4839	Capacitor—0.1 mfd., 400 volts (C73, C53, C77, C78, C85, C59, C88, C103)	
12484	Capacitor—0.25 mfd., 350 volts (C86, C93, C101, C106, C80, C76, C105)	
12741	Capacitor—.5 mfd. (C57)	
32015	Capacitor—1.0 mfd., 150 volts (C54)	
33158	Capacitor—10 mfd., 150 volts, 20 mfd., 25 volts, (C97, C104)	
33159	Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 250 mfd., 15 volts (C58, C61, C56)	
33160	Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 20 mfd., 25 volts, 20 mfd., 25 volts (C92, C79, C82, C83)	
32045	Capacitor—15 mfd. (C96)	
33475	Capacitor—20 mfd., 25 volts (C55)	
33161	Capacitor—20-50 mfd., 35 volts (C51, C108)	
33243	Coil—Oscillator coil with core and stud (L11)	
33234	Coil—1-¾ turn antenna coil, core, stud and capacitor assembly (C5, L9, L10) (green)	
33647	Coil—2 turn antenna coil, core, stud and capacitor assembly (C4, L7, L8) (yellow or purple)	
33646	Coil—3 turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange or white)	
33645	Coil—5-¾ turn antenna coil, core, stud and capacitor assembly (C2, C3, L4) (red or black)	
33644	Coil—7-½ turn antenna coil, core, stud and capacitor assembly (C1, L1, L2) (brown or blue)	
33535	Coil—Peaking coil and 10 megohm resistor assembly (L39, R44)	
33534	Coil—Peaking coil and 3900 ohm resistor assembly (L40, R48)	
33536	Coil—Peaking coil and 15,000 ohm resistor assembly (L41, R54)	
33537	Coil—Peaking coil and 10 megohm resistor assembly (L42, R56)	
33228	Condenser—Oscillator "Fine tuning" condenser, located on range switch (C9)	
33164	Control—Dual 1.2 meg. and 30,000 ohms "Vertical hold" and "Horizontal hold" controls (R106, R92)	
33206	Control—6 ohm tapped "Horizontal centering" control (R98)	
33210	Control—20 ohm tapped "Vertical centering" control (R114)	
33162	Control—4000 ohm, "Contrast" control (R45).	
33209	Control—5600 ohm, "Vertical linearity" control (R113)	
33163	Control—50,000 ohms "Brightness" control (R61)	
33207	Control—560,000 ohm "Width" control (R94)	
33208	Control—2.7 meg. "Height" control (R108)	
33002	Coupling—Flexible Bronze coupling, located on control shaft end of "contrast" control	
33383	Coupling—Flexible Bronze coupling located on panel shaft end of "contrast" control	
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	
32723	Resistor—10 ohms, 1 watt (R120)	
33325	Resistor—Voltage divider comprising a 36-100-7.4 and 5 ohm section (R119, R118 R117, R116)	
14074	Resistor—82 ohms, ¼ watt (R64, R67, R14, R21, R28, R34)	
14439	Resistor—100 ohms, ¼ watt (R53)	
13428	Resistor—150 ohms, ¼ watt (R39)	
13219	Resistor—270 ohms, 2 watts (R97)	
30499	Resistor—470 ohms, ½ watt (R90, R95)	
33326	Resistor—Voltage divider comprising a 600-300-3100-5455 and 13,000 ohm section (R125, R124, R123, R122, R121)	
14720	Resistor—1000 ohms, ¼ watt (R9, R65, R70, R18, R41, R25, R31, R37, R42)	
14993	Resistor—1200 ohms, 1/10 watt (R17)	
12267	Resistor—1200 ohms, ¼ watt (R115)	
14499	Resistor—1500 ohms, ¼ watt (R8, R24)	
31920	Resistor—1800 ohms, 1/10 watt (R16, R23, R30)	
12194	Resistor—1800 ohms, ¼ watt (R112)	
11863	Resistor—2200 ohms, 1/10 watt (R36)	
13486	Resistor—2200 ohms, 1 watt (R6)	
13031	Resistor—3300 ohms, 1/10 watt (R19, R26)	
12312	Resistor—3300 ohms, ¼ watt (R77, R87)	
30150	Resistor—3300 ohms, 1 watt (R7, R57)	
12955	Resistor—3900 ohms, ¼ watt (R109)	
30146	Resistor—4700 ohms, ¼ watt (R83, R99)	
31789	Resistor—5600 ohms, 1/10 watt (R12)	
12265	Resistor—6800 ohms, ¼ watt (R11)	
14075	Resistor—8200 ohms, ¼ watt (R101, R102, R103)	
14559	Resistor—10,000 ohms, ¼ watt (R20, R27, R33, R13, R58, R82, R84, R88, R100, R74)	
13097	Resistor—10,000 ohms, 1 watt (R79, R80)	
13594	Resistor—15,000 ohms, 1/10 watt (R43)	
14281	Resistor—22,000 ohms, 1/10 watt (R71)	
13998	Resistor—22,000 ohms, ¼ watt (R47, R49)	
12738	Resistor—27,000 ohms, ¼ watt (R91)	
11300	Resistor—33,000 ohms, 1/10 watt (R10)	
12454	Resistor—33,000 ohms, ¼ watt (R5)	
12412	Resistor—47,000 ohms, ¼ watt (R93)	
30650	Resistor—56,000 ohms, ½ watt (R55)	
12010	Resistor—68,000 ohms, 1/10 watt (R32, R38, R69)	
13715	Resistor—68,000 ohms, ¼ watt (R63, R66)	
14138	Resistor—68,000 ohms, ½ watt (R15, R22, R29, R35, R40, R68)	
14023	Resistor—82,000 ohms, ¼ watt (R78)	
14560	Resistor—100,000 ohms, ¼ watt (R72, R85, R86, R89, R104)	
30180	Resistor—120,000 ohms, ½ watt (R4)	
12264	Resistor—220,000 ohms, ¼ watt (R51, R111).	
12285	Resistor—470,000 ohms, ¼ watt (R46, R59, R96)	
12413	Resistor—680,000 ohms, ¼ watt (R50)	
13730	Resistor—1 meg., ¼ watt (R1, R2, R76, R75, R73, R52, R60, R81)	
2546	Resistor—1 meg., 1 watt (R3)	
30208	Resistor—1.2 meg., ¼ watt (R105)	
5028	Resistor—1.8 meg., ¼ watt (R107)	
12679	Resistor—2.2 meg., ¼ watt (R110)	
33229	Roller—Rubber friction roller for oscillator condenser drive. Part of range switch assembly	
33165	Socket—2-prong female socket for Video output to Kinescope (X3)	
33011	Socket—4-contact female socket for Kinescope deflecting yoke (X1)	
31251	Socket—8-contact octal type socket	
18007	Socket—Ceramic octal socket for 6L6 "Hor. out" and 6J5 "Osc."	
14278	Socket—Television audio output pin socket (X5)	
33227	Switch—Range switch with shield plate and mounting studs—less coils, condenser and friction roller (S1, S2, S3)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
33330	Transformer—"1st det. P1" I-F transformer (L17, L18) (br. and br.)	
33331	Transformer—"1st det. P2" I-F transformer (L19, L20) (Brown and red)	
33334	Transformer—"1st pix P1" I-F transformer (L21, L22, L23, L24) (Brown and green)	
33335	Transformer—"1st pix P2" (L25) or "2nd pix P2" (L30) I-F transformer (brown and blue)	
33338	Transformer—"1st sound" I-F transformer (L45, L46) (orange and red) (Used in early production)	
33526	Transformer—"1st sound" I-F transformer (L45, L46) (red and white) (Used in late production)	
33516	Transformer—"2nd pix P1" I-F transformer (L26, L27, L28, L29) (orange and orange)	
33339	Transformer—"2nd sound" I-F transformer (L47, L48) (orange and orange)	
33333	Transformer—"3rd pix" I-F transformer (L31, L32, L33) (orange and blue)	
33336	Transformer—"4th pix" I-F transformer (L34, L35, L36) (brown and black)	
33337	Transformer—"5th pix" I-F transformer (L37, L38) (brown and white)	
32899	Transformer—Horizontal oscillation transformer (T1)	
9862	Transformer—Horizontal output transformer (T2)	
32900	Transformer—Vertical output transformer (T4)	
32898	Transformer—Vertical oscillation transformer (T3)	

3-BAND RADIO RECEIVER CHASSIS
RC-427 IN TRK-12
RC-427A IN TRK-9

STOCK No.	DESCRIPTION	
31863	Board—Antenna-ground terminal board	
32232	Body—Station setting contact body and spring	
32090	Bracket—Motor mounting bracket	
31282	Bracket—Magic Eye mounting bracket and clip	
32635	Cable—Indicator pointer drive cable—60-in. length	
30766	Cap—"Magic Eye" cap	
14392	Capacitor—4.7 mmfd. (C46)	
31353	Capacitor—15 mmfd. (C6)	
31270	Capacitor—100 mmfd. (C41, C42)	
12720	Capacitor—100 mmfd. (C38, C16)	
12724	Capacitor—120 mmfd. (C12, C21)	
13003	Capacitor—180 mmfd. (C3, C17)	
12952	Capacitor—330 mmfd. (C39)	
31433	Capacitor—560 mmfd. (C8)	
31552	Capacitor—680 mmfd. (C19, C20, C23, C24)	
32197	Capacitor—3900 mmfd., 500 volts (C7)	
31405	Capacitor—6000 mmfd., 500 volts (C10)	
5107	Capacitor—.0025 mfd., 700 volts (C35, C36, C55)	
30303	Capacitor—.0035 mfd., 700 volts (C40, C54)	
33584	Capacitor—.005 mfd., 1200 volts (C53)	
4937	Capacitor—.01 mfd., 1000 volts (C37, C44, C43, C29)	
11315	Capacitor—.015 mfd., 400 volts (C31)	
4870	Capacitor—.025 mfd., 400 volts (C32, C50)	
32787	Capacitor—.05 mfd., 400 volts (C27, C25)	
4839	Capacitor—0.1 mfd., 400 volts (C22, C18, C26, C34, C52)	
12484	Capacitor—.25 mfd., 350 volts (C13, C28, C48, C45, C51)	
12741	Capacitor—0.5 mfd., 150 volts (C47)	
18530	Capacitor—20-20 mfd., 350 volts (C33, C49)	
32088	Capacitor—Motor capacitor 60 mfd., 40 volts (C30)	
31263	Coil—"A" Band antenna coil (L1, L2)	
31265	Coil—"A" Band detector coil (L6, L7)	
31296	Coil—"A" Band oscillator coil (L10)	
31980	Coil—"B" and "C" Band antenna coil (L3, L4, L5)	
31783	Coil—"B" and "C" band oscillator coil (L8, L9)	
31234	Condenser—3-gang variable condenser (C1, C11, C14, C2, C15)	
12714	Condenser—Air trimmer condenser (C9)	
31292	Condenser—Double section trimmer capacitor 3-30 mmfd., each section (C4, C5)	
31971	Contact—Push button switch contacts comprising 11 contacts riveted on insulating strip	
31972	Contact—Push button switch contacts—comprising 14 contacts riveted on insulating strip	
31231	Contact—Station setting contact tip	
33446	Control—"Power-volume control" — 1-½ meg. (R12, S10, S11)	
32634	Cord—Band indicator and variable condenser drive cord	
31269	Core—Core and stud for 1st, 2nd, or 3rd I-F transformer	
32093	Damper—Flywheel for rear end of motor shaft	
32096	Disc—Friction disc and pinion gear	
32091	Drive—Friction drive gear assembly	
31273	Drum—Variable condenser drive drum	
31239	Gear—Knob shaft drive gear and hub	
31532	Indicator—Band indicating strip (Model TRK-12 only)	
31304	Indicator—Band indicating strip (Model TRK-9 only)	
31480	Lamp—6.3 volt electric tuning set-up lamp Mazda No. 47	
11891	Lamp—6.3 volt dial lamp Mazda No. 44	
31969	Lockplate—Push button switch lockplate comprising 10 contact locks in 1 strip	
32095	Motor—Electric tuning drive motor complete (M1)	
31228	Plate—Station selector contact plate — less plungers	
31227	Plate—Station selector mounting plate—mounts on rear of variable condenser	
12493	Plug—Female connector for speaker cable (X9)	
31271	Pulley—Drive pulley fastens on station selector knob shaft	
31280	Pulley—Indicator pointer drive cord pulley	
31272	Pulley—Range switch pulley	
14720	Resistor—1000 ohms, ¼ watt (R7)	
12267	Resistor—1200 ohms, ¼ watt (R6)	
12312	Resistor—3300 ohms, ¼ watt (R5)	
14559	Resistor—10,000 ohms, ¼ watt (R10)	
12695	Resistor—15,000 ohms, ¼ watt (R14)	
12738	Resistor—27,000 ohms, ¼ watt (R13)	
13477	Resistor—27,000 ohms, 1 watt (R22)	
12454	Resistor—33,000 ohms, ¼ watt (R3, R4)	
12266	Resistor—39,000 ohms, ¼ watt (R23)	
12412	Resistor—47,000 ohms, ¼ watt (R18)	
12286	Resistor—56,000 ohms, ¼ watt (R30)	
14560	Resistor—100,000 ohms, ¼ watt (R11, R16, R20, R32, R31)	
14020	Resistor—150,000 ohms, ¼ watt (R17)	
12199	Resistor—270,000 ohms, ¼ watt (R15, R33, R34)	
18020	Resistor—470,000 ohms, 1 watt (R24)	
12486	Resistor—560,000 ohms, ¼ watt (R21)	
12013	Resistor—1 meg., 1/10 watt (R8)	
13730	Resistor—1 meg., ¼ watt (R1, R2, R19)	
12679	Resistor—2.2 meg., ¼ watt (R9)	
31548	Resistor—Voltage divider consisting of one 1500, one 2950, one 3400, one 30 and one 3165 ohm section (R25, R26, R27, R28, R29)	
14887	Retainer—Drive cord pulley retainer	
32086	Roller—Rubber friction roller for front end of motor shaft	
31233	Rotor—Station selector rotor disc—mounts on rear of variable condenser shaft	
5042	Screw—No. 8-32 set screw for drive pulley	
14350	Screw—No. 8-32 square head set screw for rotor disc stock No. 31233	
31681	Shaft—Dial drive knob shaft	
31364	Socket—Dial or electric tuning set-up lamp socket	
13871	Socket—"Magic Eye" socket	
31251	Socket—Octal type Radiotron or power supply socket	
14278	Socket—Pin socket for phono or television input with mounting plates (X16) (X17)	
31279	Spring—Band indicator tension spring	
13638	Spring—Indicator drive cord tension spring	
31970	Spring—Push button switch lock bar spring	
31232	Spring—Station setting tip spring	
12007	Spring—Stud retaining spring for I-F adjuster	
31418	Spring—Variable condenser drive cord tension spring	
33448	Switch—Feed-back switch (S8, S9)	
33447	Switch—H. F. tone control phono-radio-Television and power switch (S4, S5, S6, S7, S12)	
31979	Switch—Range switch (S1, S2, S3)	
31968	Switch—Station selector push button switch complete	
31565	Transformer—1st I-F transformer complete (L11, L12, C19, C20, L19)	
31551	Transformer—2nd I-F transformer complete (L13 L14, C23, C24, L20)	
31549	Transformer—3rd I-F transformer complete (L15, L16, C41, C42)	
32231	Washers—Comprising one metal washer, two fibre washers and one solder lug or retainer for station setting body	
32094	Washers—Assorted washers for mounting damper on motor shaft	

POWER SUPPLY UNIT
(TELEVISION AUDIO RECEIVER)
(RS-83E)

STOCK No.	DESCRIPTION	
14531	Capacitor—25 mfd. filter capacitor (C1)	
33606	Plug—8-contact male plug for power supply cable (X20)	
31251	Socket—5U4G Radiotron socket	
33445	Transformer—110 V. 60 cycle power transformer (T1)	

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	
	7,500 VOLT TELEVISION POWER UNIT	
	TRK-12—KK-7	
	TRK-9—KK-7A	
33016	Bushing—Porcelain bushing and spring	
33288	Cable—Insulated connector complete with cable for Kinescope (2nd anode)	
32197	Capacitor—3,900 mmfd., (C115, C116) (1st prod.)	
32901	Capacitor—0.03 mfd., 7,500 volt (C113, C114)	
32400	Capacitor—20 mfd., 450 volt (C111, C112)	
33023	Capacitor—80-10-mfd., 400 volt (C110, C109).	
14854	Choke—Filter choke (L49)	
32940	Choke—Filter choke (L50)	
30314	Clip—Plate connector for 2V3G Radiotron	
33037	Control—Focus control, 400,000 ohms (R129) (Used in 1st production)	
33971	Control—Focus control, 400,000 ohms (R129) (Used in 2nd production)	
33002	Coupling—Flexible bronze coupling	
10907	Fuse—3 ampere, 250 volt	
33015	Insulator—Stand-off insulator only—less hardware	
32937	Knob—Focus control knob	
33244	Plug—2-prong male connector for A.C. power cord (X22)	
33166	Plug—Two prong male plug for Kinescope grid-cathode cable (X4)	
33501	Resistor—330,000 ohms, 1W (1,000V.) (R126, R130)	
33502	Resistor—470,000 ohms, 1W (1,000V.) (R127, R128, R137)	
33554	Resistor—820,000 ohms, 1W (1,000V.) (R131, R132, R133, R134, R135, R136)	
33024	Shaft—Bakelite shaft for focus control	
18007	Socket—Ceramic octal base socket and retaining ring for high voltage rectifier	
33245	Socket—Kinescope socket, less cable (X11)	
31251	Socket—Octal base 5T4 rectifier, or television power supply socket (X13)	
12143	Socket—6-prong television power supply socket (X15)	
32909	Support—Rectifier socket, plate, and stand-off insulator assembly	
32939	Transformer—Filament power transformer (T7)	
9861	Transformer—High voltage power transformer (T6)	
32938	Transformer—Low voltage power transformer (T5)	
	SPEAKER ASSEMBLY	
	RL-70F-5	
31825	Cap—Cone center dust cap	
11469	Coil—Hum neutralizing coil (L21)	
11234	Coil—Speaker field coil (L17)	
31275	Cone—Speaker cone assembly (L18)	
31567	Plug—3-prong male feed back cable plug (X8)	
31539	Plug—5-prong speaker plug (X10)	
31556	Speaker—Speaker complete (RL-70F-5)	
31557	Transformer—Speaker output transformer (T1)	
	MISCELLANEOUS ASSEMBLIES	
	TRK-12	
	TRK-9	
31358	Button—Station selector push button	
33676	Cable—17½-inch shielded audio lead with plugs (X6, X18) (Model TRK-9 only)	
33480	Cable—38-inch shielded audio lead with plugs (Model TRK-12 only) (X6, X18)	
33246	Cable—Low capacity Kinescope grid cable (Model TRK-12 only)	
33605	Cable—Low capacity Kinescope grid cable (Model TRK-9 only)	
33597	Cap—Blue pilot lamp "Bulls Eye"	
32897	Clamp—Deflecting yoke clamp assembly	
4573	Connector—2-prong female connector for power supply circuit (X23)	
33363	Connector—2-prong female connector, used on interlock cable (X21)	
33002	Coupling—Flexible bronze coupling (Used in 2nd production receivers)	
31456	Cover—Eight protective covers for push button markers	
32815	Cushion—Kinescope masking cushion (Model TRK-12 only)	
33019	Cushion—Kinescope masking cushion (Model TRK-9 only)	
33643	Cushion—Television chassis mounting cushion with screw, spacer and washer (sufficient for one chassis)	
33442	Dial—Three-band glass dial scale	
33329	Escutcheon—Dial escutcheon less buttons, button shaft and dial scale	
32083	Frame—Dial frame with screen less pointer, carriage and rod	
10907	Fuse—3 ampere line fuse	
33074	Glass—6⅞ by 8¾ inch safety protective glass (Model TRK-9 only)	
33076	Glass—8¾ by 11⅛ inch safety protective glass (Model TRK-12 only)	
33282	Hinge—Piano type lid hinge and screws	
33468	Knob—Radio tuning, volume or range selector knob	
33470	Knob—Television "Contrast," "Hor. hold" or "Fine Tuning" knob	
33471	Knob—Television "Brightness" or "Vert. hold" knob	
33472	Knob—Television "Station selector" knob	
33469	Knob—"Victrola—Radio—Television—Fidelity selection" knob	
11891	Lamp—6.3 V. pilot lamp, Mazda No. 44	
31589	Marker—Complete set of call letter markers	
31458	Marker—"Dial Tuning" push button marker	
31457	Marker—"Victrola" push button marker	
33075	Mirror—20½ by 14¾ in. viewing mirror	
33225	Nut—Speed nut for mounting high frequency coil assemblies	
4577	Plug—2-prong male plug for power supply circuit (X24)	
33244	Plug—2-prong male plug, used on interlock cable (X22)	
33166	Plug—2-prong male plug for Kinescope grid-cathode cable (X4)	
32816	Plug—4-prong male plug for deflecting yoke cable (X2)	
12493	Plug—5-prong female speaker cable plug (X9)	
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	
31542	Pointer—Station selector pointer with carriage	
31287	Rod—Dial frame pointer slide rod	
32083	Screen—Dial frame difusing screen with rivets	
4560	Screw—¼20 by 1¼ in. long, machine screw, washer and lockwasher for chassis mounting (12 required)	
33517	Sleeve—Bell mouth sleeve for screw-driver adjustments (Model TRK-9 only)	
14270	Spring—Knob spring for stock Nos. 33468, 33471, 33472, 33469 knobs	
30330	Spring—Knob spring for stock Nos. 33470, knob	
33362	Switch—Interlock switch with leads	
31522	Support—Left hand lid support	
31478	Support—Right hand lid support	
9857	Yoke—Deflecting yoke complete with cable and 4-prong plug (L43, L44, R62)	

Stock No. 151-2 Cathode-Ray Oscillograph

ELECTRICAL CHARACTERISTICS

Power Supply Rating	Voltage	110–120 volts AC
	Frequency	50–60 cycles
	Wattage Consumption	35 watts
	Fuse Protection	1 ampere
Operating Limits	Deflection sensitivity at amplifier inputs	0.5 volt (r.m.s.) per inch (max. "gain.")
	Deflection sensitivity at cathode-ray tube inputs	30 volts (r.m.s.) per inch
	Input Characteristics:	
	(1) With amplifier	1 megohm, approximately 30 mmfd.
	(2) Without amplifier	2 megohms, approximately 40 mmfd.
	Frequency response range of amplifiers	20–15,000 cycles
	Maximum signal input (with amplifier)	500 volts (r.m.s.)
	Frequency range of timing axis	30–10,000 cycles
	Maximum d-c voltage across input binding posts	100 volts with amplifiers 200 volts direct
Radiotrons Used and Functions	1 RCA-6C6	Signal amplifier for vertical deflection
	1 RCA-6C6	Signal amplifier for horizontal deflection
	1 RCA-885	"Saw-tooth" oscillator
	1 RCA-902	Cathode-ray tube (2-inch)
	1 RCA-80	Half-wave rectifier

MECHANICAL SPECIFICATIONS

Overall Dimensions	Height (including carrying-handle)	9¼ inches
	Width	13¾ inches
	Depth	7¾ inches
Weight:		14½ pounds

CIRCUIT DESCRIPTION

The schematic arrangement of the entire circuit is shown in Figure 2.

There is one unusual feature to this circuit that causes surprising voltage distributions but does not affect the operating theory. The positive side of the power supply is connected to ground, which is common practice in cathode-ray oscillographs, but in this case the power supply is common to the oscillograph and amplifier tubes. Thus, the cathode, grid, suppressor and screen grids of the amplifiers are all at a high potential to ground and the plate is nearly at ground. It may be argued that no improvement has been made since the grid clips are at high voltage, but the grid clips cannot be reached when the equipment is in the case, and the resistance of the circuit is sufficiently high to limit the current to safe values at all but very low settings of the gain control.

While the voltage distribution, as shown in Figure 4 is quite unusual, the method of operating the amplifier tubes has not been affected. The grids are maintained about two volts negative from the cathode, the suppressor is connected to the cathode, the screen grid is about 35 volts positive from the cathode and the plate still more positive.

An amplifier consisting of a single RCA-6C6 constitutes the means of obtaining "gain" for the signal applied to the vertical deflecting system. The input to this stage is a high-resistance potentiometer connected to provide "gain" control. An isolation capacitor is made a part of the input circuit to exclude any d-c which may be associated

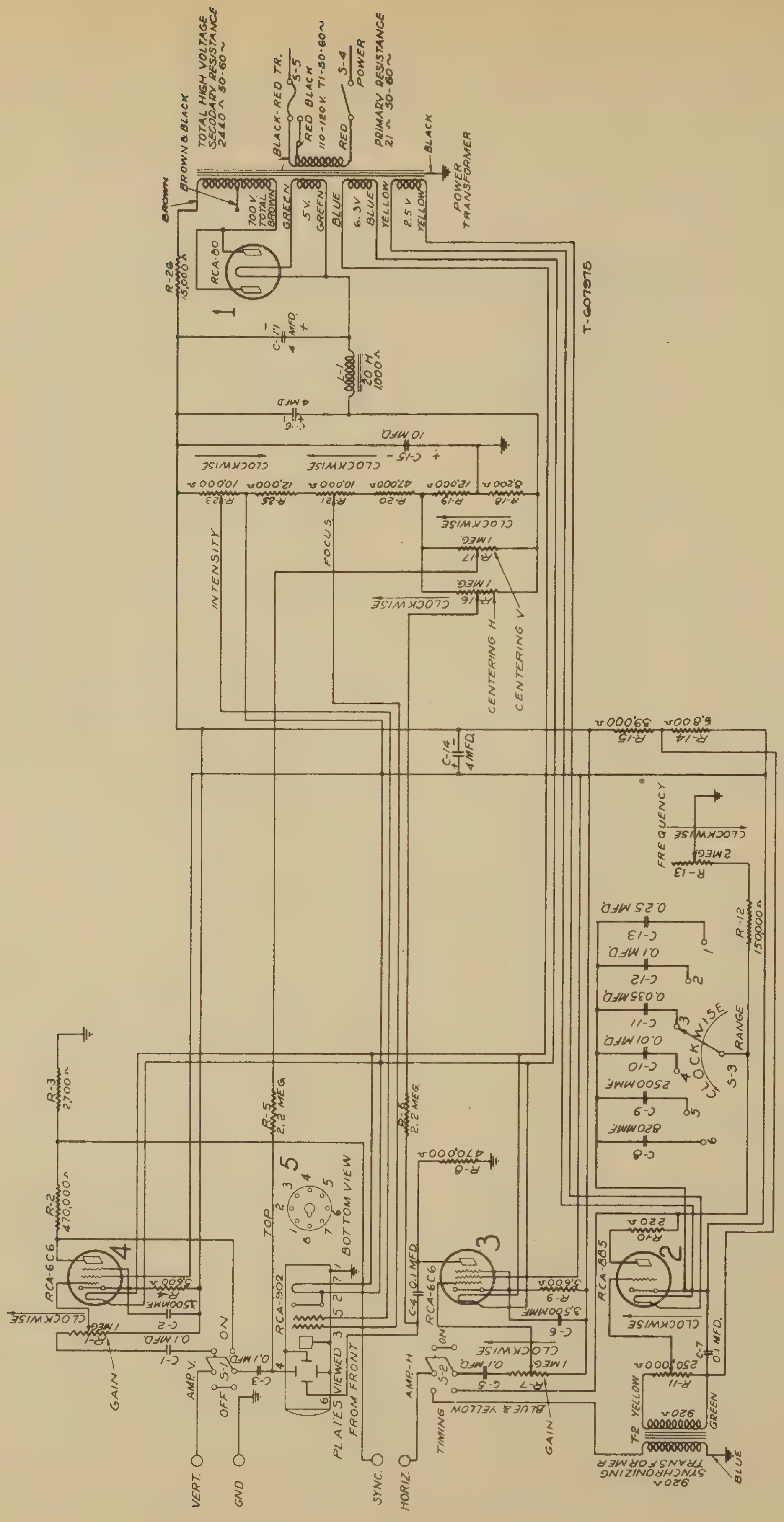


Figure 2—Schematic Circuit Diagram, T-607975

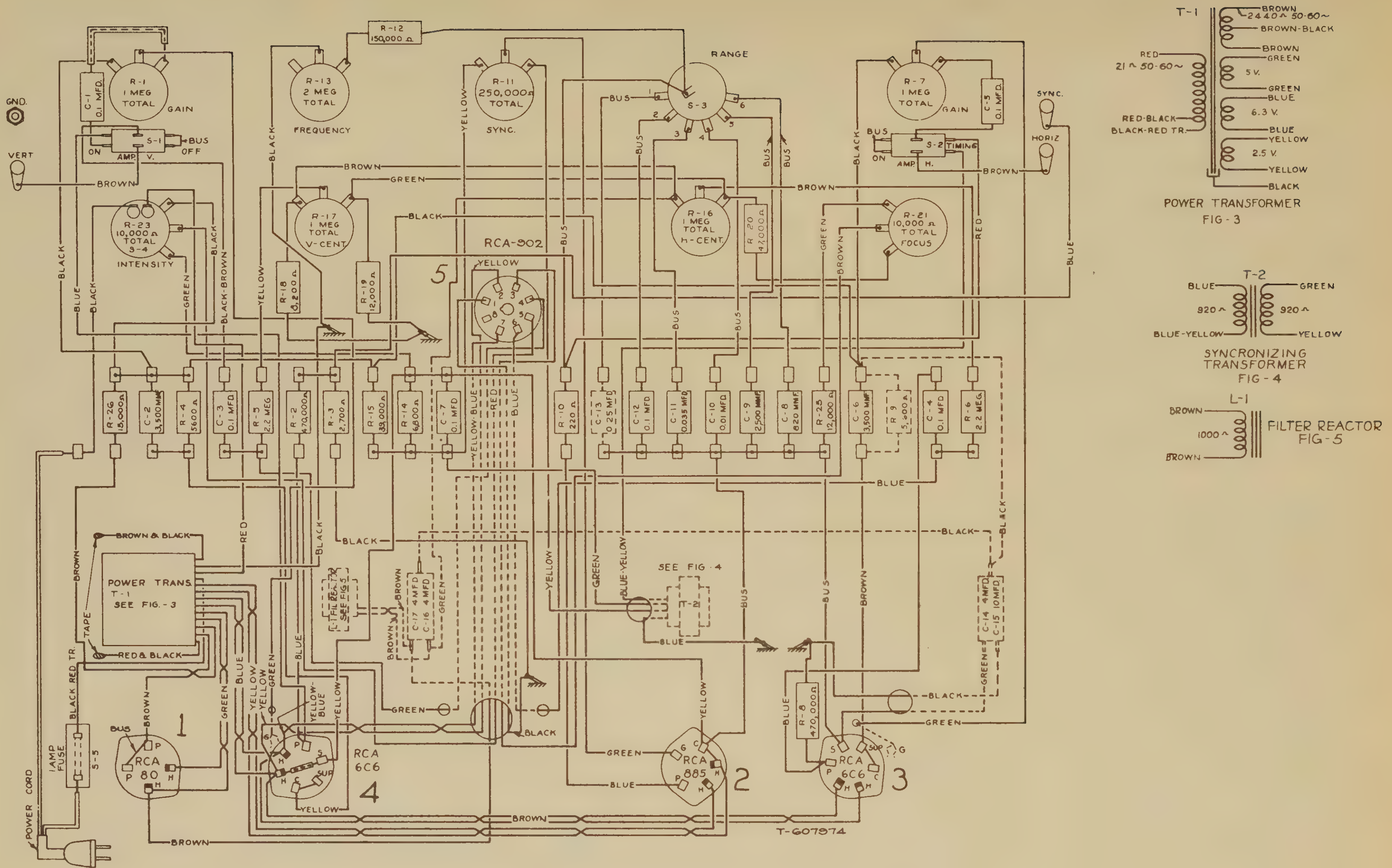


Figure 3—Chassis Connection Diagram, T-607974

with the circuit being observed. The plate, or output circuit of the RCA-6C6 is a resistor whose value is so designed as to effect a broad and uniform frequency response in the amplifier stage. Coupling from the amplifier plate to the cathode-ray tube is made through a capacitor.

The amplifier for the signal applied to the horizontal deflecting plates is identical to that described above. A switch is provided to disconnect the vertical amplifier, thereby applying the voltage to be studied directly to the deflecting plates. There is an input switch to the horizontal amplifier for feeding in the timing or "saw-tooth" oscillator signal.

A synchronization system is included, as shown in the input circuit of the RCA-885. This is the "Synchronizing" circuit described under "Operation." The timing axis oscillator stage, using the RCA-885, is designed to have a frequency range of 30-10,000 cycles, controlled through the "Range" switch and "Frequency" control. The signal from this oscillator has a "saw-tooth" wave-shape, obtained as follows: A d-c potential is applied across a capacitor and resistor in series in the plate circuit of the RCA-885 tube. This voltage charges the capacitor until the ionization potential (plate voltage at which the gas in the RCA-885 ionizes) is reached. When the RCA-885 ionizes the capacitor is short-circuited and the voltage across it drops nearly to zero. The RCA-885 immediately deionizes and allows the capacitor to start charging again. In this manner, the voltage across the capacitor has a "saw-tooth" characteristic. The capacitor referred to above is selected by the position of the "Range" switch as described in "Operation." With "Ampl. H" switch on "Timing," the voltage across this capacitor passes through the horizontal amplifier to the plates of the RCA-902.

Power required for operation of the instrument is obtained through the power unit from a 110–120 volt, 50–60 cycle supply. Voltage rectification is accomplished by an RCA-80 connected in the secondary windings of the power transformer.

MAINTENANCE

Radiotrons

Under ordinary usage within the ratings specified for voltage supply, tube life will be consistent with that obtained in other applications. The rectifier, oscillator, and amplifier tubes will wear in accordance with loss of emission; whereas the determining factor in the life of the RCA-902 cathode-ray tube is the deterioration of the fluorescent screen. It is therefore advisable to avoid leaving a bright, concentrated "spot" on the screen.

It is not ordinarily possible to test the Radiotrons in their respective sockets, due to the likelihood of circuit effects causing error. Their removal and check with standard tube-testing apparatus is therefore desirable. Replacement of the questionable tube with one known to be in good condition, is another acceptable and definite means of tracing tube troubles.

To remove the RCA-902, it is necessary to loosen the clamp at the base of the tube, remove the tube escutcheon from the front panel and slide the tube out the front of the instrument. Replacement is the reverse operation.

Fuse Replacements

A small 1-ampere cartridge fuse is used in the primary circuit of the power transformer. This fuse is intended for protection of the entire power system of the Oscillograph, and should, therefore, not be replaced by one having a higher rating, nor be shorted out. A fuse failure should be carefully investigated before making a replacement, as usually in the use of fuses of accepted quality, there must be a definite cause for the fuse breakdown. The cause may originate from a surge in the power-supply line, but the greater percentage of causes may be centered in the apparatus protected, such as shorted rectifier elements, and so forth.

Resistance and Continuity Tests

The schematic circuit is shown in Figure 2, and the actual wiring layout giving color code and physical relation of the parts is shown in the chassis wiring diagram, Figure 3. All resistor and capacitor values are given to facilitate a rapid and sure test for continuity of circuit and the condition of same. Coils and transformer windings have their d-c resistances shown.

In working on the chassis of the Oscillograph, care must be observed to have the power supply completely disconnected. The high voltages associated with the circuits of the cathode-ray tube make it dangerous to attempt to handle or work on the chassis while the power is "On."

Care should be exercised in replacing any part that may be found faulty. All wiring associated with the part involved must be taken off, and especial attention given to possibility of damage to other wiring or parts. The relation of wiring and parts should be the same as in the original assembly.

Voltage Measurements

One means of learning the condition of operation and tracing the circuit faults of the Oscillograph is by checking the correctness of the voltages and currents at the Radiotron sockets. The normal values, which can be expected to be found when the instrument is working properly under the specified power ratings, are indicated adjacent to the socket positions in Figure 4, and also given by the Radiotron Socket Voltage Table. In general, the values shown are measured from the socket contacts to ground; however, the heater or filament voltages are a-c and appear between the F-F or H-H clips. All readings given are actual operating values, and do not allow for any errors likely to be caused by current drain of the measuring instrument. Some of the voltages are not measurable with ordinary test equipment; these have been noted by an asterisk (*) in the table.

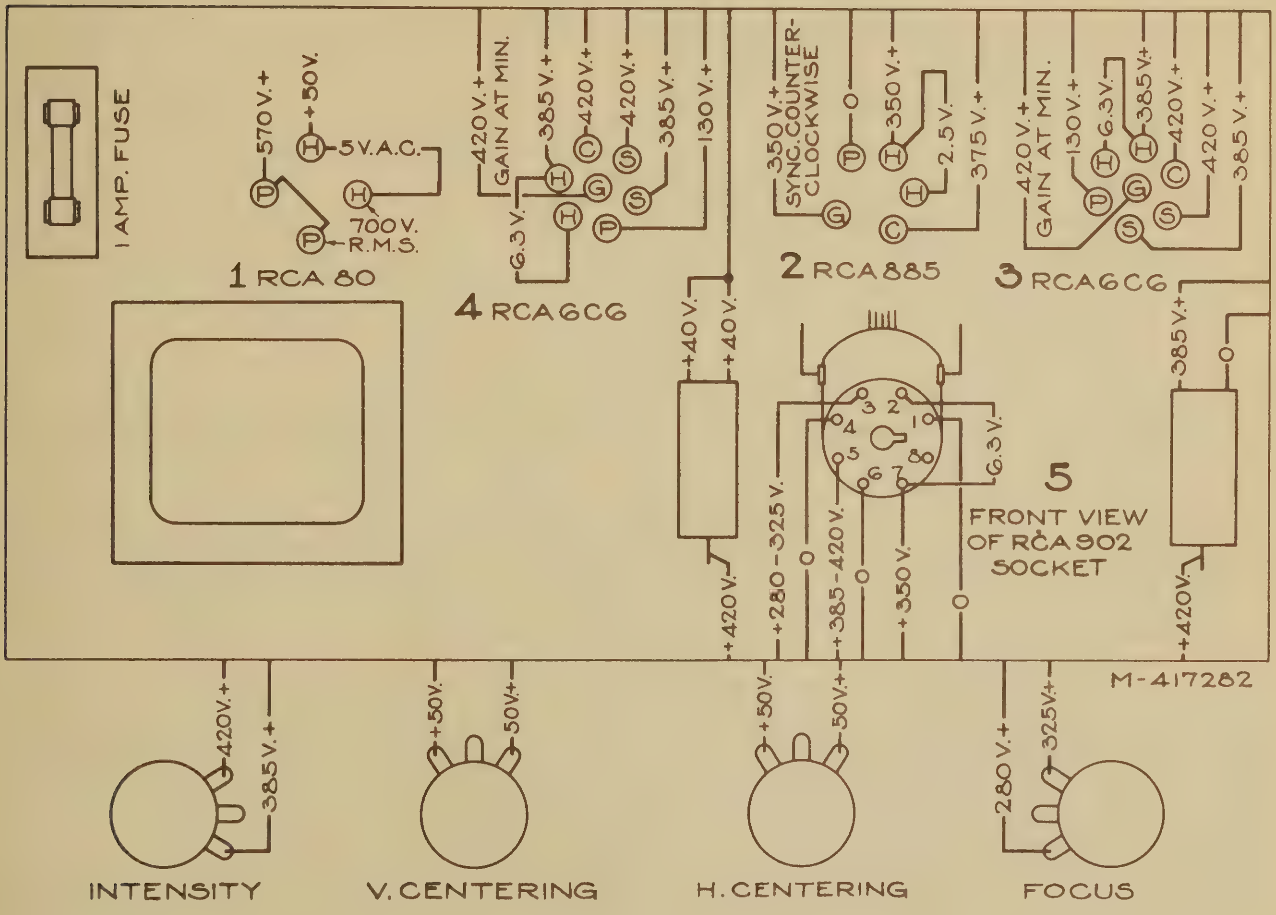


Figure 4—Radiotron Socket Voltage Diagram, M-417282

RADIOTRON SOCKET VOLTAGE TABLE

120-Volt Supply Line

RADIOTRON			Cathode Volts to Ground DC.	Screen Grid Volts To Ground DC.	Plate Volts to Ground DC.	Cathode Current MA-DC.	Anode Volts to Ground DC.		Deflecting Plates to Ground DC.		Filament or Heater Volts AC.
Socket Number	Type	Function					No. 1	No. 2	D$_1$	D$_2$	
5	RCA-902	Cathode Ray	—385	—	—	.06	—280 to —325	O	+50 to —50*	+50 to —50*	6.3
1	RCA-80	Rectifier	+60	—	—570	6	—	—	—	—	5.0
3	RCA-6C6	20—15,000 Cycle Amp.	—420	—385	—130*	.27	—	—	—	—	6.3
4	RCA-6C6	20—15,000 Cycle Amp.	—420	—385	—130*	.27	—	—	—	—	6.3
2	RCA-885	30—10,000 Cycle Osc.	—375	—	O	.2—2ma.	—	—	—	—	2.5

* Cannot be correctly measured with ordinary voltmeter.

REPLACEMENT PARTS

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers.

Stock No.	Description		Stock No.	Description	
14118	Power Transformer—110-120 v, 50-60 cy. (T-1)		12265	Resistor—6,800 ohms, ¼ watt (R-14)	
14119	Synchronizing Transformer (T-2)		14250	Resistor—8,200 ohms, ½ watt (R-18)	
13111	Filter Reactor (L-1)		30436	Resistor—12,000 ohms, ½ watt (R-19)	
4839	Capacitor—0.1 mfd, 400 v (C-1, C-3, C-4, C-5, C-7, C-12)		30866	Resistor—12,000 ohms, 1 watt (R-25)	
30303	Capacitor—0.0035 mfd (C-2, C-6)		5114	Resistor—15,000 ohms, 1 watt (R-26)	
12536	Capacitor—820 mmfd (C-8)		12266	Resistor—39,000 ohms, ¼ watt (R-15)	
5107	Capacitor—0.0025 mfd (C-9)		13596	Resistor—47,000 ohms, 2 watts (R-20)	
4858	Capacitor—0.01 mfd (C-10)		14132	Resistor—150,000 ohms, 1 watt (R-12)	
5196	Capacitor—0.035 mfd (C-11)		12285	Resistor—470,000 ohms, ¼ watt (R-2, R-8)	
12484	Capacitor—0.25 mfd (C-13)		12679	Resistor—2.2 megohms, ¼ watt (R-5, R-6)	
14121	Bypass Capacitor—4/10 mfd (C-14, C-15)		4750	Switch—D.P.D.T. Toggle (S-1, S-2)	
14120	Filter Capacitor—4/4 mfd, 475 v (C-16, C-17)		14127	Switch—Single gang, 6 position (S-3)	
14126	Potentiometer—10,000 ohms with Switch (R-21, S-4)		14133	Fuse—1 ampere (S-5)	
14125	Potentiometer—10,000 ohms (R-23)		4794	Tube Socket—4 prong	
14124	Potentiometer—250,000 ohms (R-11)		4814	Tube Socket—5 prong	
14123	Potentiometer—1 megohm (R-1, R-7, R-16, R-17)		4786	Tube Socket—6 prong	
14122	Potentiometer—2 megohms (R-13)		31251	Tube Socket—(Octal) for RCA-902	
14561	Resistor—220 ohms, ¼ watt (R-10)		31956	Tube Escutcheon—for RCA-902	
14024	Resistor—2,700 ohms, ¼ watt (R-3)		31957	Tube Scanning Screen	
13714	Resistor—5,600 ohms, ¼ watt (R-4, R-9)		4857	Binding Post (HIGH)	
			4607	Binding Post (0)	
			7960	Bar Pointer Knob	
			13210	Fuse Terminal Board Assembly	

Stock No. 153 Test Oscillator

ELECTRICAL CHARACTERISTICS

Frequency Range: 100 to 30,000 kc.
Calibration Accuracy: ±2%.
R-F Output:

Terminal	Voltage Range	Impedance
Low	0.000004 to 0.01 volt	10 ohms
Medium	0.01 to 0.25 volt	750 ohms
High	1.00 volt (fixed)	4,000 ohms

Modulation Frequency (internal): Approx. 400 cycles.
A-F Output: 8 volts across 50,000 ohms impedance at no load; correspondingly less as loaded.

A-F Input: 1.5 volts for 30% modulation.
Tube Complement:

Function	Type
R-F Oscillator	1 RCA-6J7
A-F Oscillator	1 RCA-6C5
Rectifier	1 RCA-5W4

Power Supply Requirements: 110-120 volts, 50-60 cycles, 30 watts, as specified on license notice inside the case.

MECHANICAL SPECIFICATIONS

Dial: Full-vision type, 6½ inches diameter (over 50 inches calibration).
Dimensions: 13¾″ length x 9¼″ height x 6½″ depth.

Weight: 12½ lbs.
Finish: Baked lacquer, fine blue-gray wrinkle.

IMPORTANT

Upon unpacking this instrument, remove the chassis from the case and inspect the tubes, grid-cap connections and fuse. The chassis may be withdrawn upon removing the three screws in the back of the case. Replace the chassis and tighten the three screws before operating.

APPLICATION

The Stock No. 153 Test Oscillator, although useful in a wide variety of applications, is adapted primarily to servicing of radio receivers. Its output may be adjusted to any frequency within the overall range of 100 to 30,000 kilocycles (0.1 to 30 megacycles) and may be regulated in strength between the limits of four microvolts and one volt. To facilitate alignment operations, a source of modulation at approximately 400 cycles is provided internally. This audio-frequency energy may be utilized independently if desired, eight volts appearing across 50,000 ohms impedance at no load. For measurements, such as overall fidelity, modulation from an external source may be applied.

INSTALLATION

The test oscillator is ready for immediate use upon inserting the power cord plug into an electrical outlet supplying power at the proper voltage and frequency (110-120 volts, 50-60 cycles). Connections to the apparatus under test and to other pieces of test equipment obviously will depend upon the type of service intended. For receiver alignment work, use of a cathode-ray oscillograph is definitely advantageous and this method is rapidly displacing the output meter test in modern service shops. RCA offers a choice of four cathode ray oscillographs especially designed for this purpose— Stock No. 151 Oscillograph uses a one-inch Cathode Ray Tube—Stock No. 151-2, a two-inch tube—Stock No. 155, a three-inch tube and Stock No. 160 a five-inch tube. The use of a Frequency Modulator, Stock No. 9558, is also recommended. For overall fidelity measurements, it will be necessary to employ an external source of modulation which may be varied over the audible range. The RCA Stock No. 9633 (Type TMV-134-A) Beat-Frequency Oscillator is recommended for such applications.

RECEIVER ALIGNMENT

CONNECTIONS

Three output pin jacks are provided in the high-side of the test oscillator for controlling the oscillator output (input to the receiver), the markings "HIGH," "MED." and "LOW" being self-explanatory. Use the "HIGH" jack initially to insure ample signal but shift to one of the others as soon as a partial alignment is achieved. It is always advisable to use the lowest possible value of input signal to the receiver.

In superheterodyne receivers, the intermediate-frequency stages should be aligned first and preferably in their reverse order, starting at the stage immediately preceding the second detector. Connect the input lead through a fixed capacitor of from 0.001 mfd. to 0.01 mfd. to the grid of the tube preceding the circuit under alignment. Since it is essential that the operating characteristics of the stage shall not be altered, this connection should be made leaving the grid lead in place. The low side of the oscillator (from the "GND." tip jack) should be connected to receiver ground––usually the chassis.

To align the radio-frequency stages of a superheterodyne or tuned-radio-frequency receiver, connect the high-side of the test oscillator to the receiver antenna lead (or terminal) and the low-side to receiver ground. The former connection should be made through a dummy antenna, comprising a resistor or capacitor or both, as advised by the manufacturer of the receiver; a 300-ohm resistor will generally afford satisfactory results. With highly-sensitive receivers, the input lead should be shielded and kept as short as possible in order to reduce stray pickup.

Although an approximate alignment can be made by ear, precision adjustment is possible only through use of a visual indicating device, such as an output meter or, preferably, a cathode-ray oscillograph. Connections to an output meter obviously will depend upon the type of meter employed, whether it be a milliammeter for use in the detector plate circuit, voltmeter across the plate load of the output stage or receiver voice coil, or some other variety. Such connections, therefore, are best left to the discretion of the user. If a cathode-ray oscillograph is to be employed, refer to Figure 2. for the essential arrangement of component units. The frequency modulator shown is used to sweep the test-oscillator frequency over a narrow band, this action being obtained by plugging the output cable of the former into the "FREQ." jack of the test oscillator.

Using the oscillographic method, the audio output of the detector is brought to the binding posts connected to the *vertical* deflection plates—marked "VERT." or "VERTICAL" in the RCA oscillographs. In the case of a diode detector, this connection generally may be made across the volume control or diode load resistor. Where the detector is a triode, tetrode, or pentode, the "HIGH" binding post should be connected to the plate, and the "O" post to ground. It will be necessary to insert a resistor of approximately 20,000 ohms in series with the plate circuit in receivers which employ transformer or impedance coupling to the first audio stage, in order to make the load resistive. The load inductance should be bypassed with a capacitor of not less than 1 mfd.

PROCEDURE

As noted under "Connections," it is essential that the intermediate-frequency stages of a superheterodyne type receiver shall be aligned before the radio-frequency stages and this sequence, therefore, is observed in the following discussion. The section entitled "R-F Alignment" also covers the alignment of tuned-radio-frequency type receivers.

I-F Alignment.—The i-f stages should be aligned in their reverse order, starting at the last stage and proceeding toward the first detector (converter). With all connections made as outlined above, apply power to the test oscillator by turning the "POWER MODULATION" switch to the "INT." position. The 400-cycle modulation tone will be heard as the stage is brought into resonance by adjustment of the associated trimmers.

Set the "RANGE" switch and dial to produce the nominal intermediate frequency and adjust the output level as desired by selecting the most suitable of the pin jacks marked "HIGH," "MED." and "LOW." The "OUTPUT" control enables fine adjustment on the "LOW" and "MED." pin-jack positions.

Peak the trimmers associated with the stage involved as described in the manufacturer's service notes. It is preferable to adjust first the primary and then the secondary of the coupling transformer.

The foregoing procedure should be followed whether using an output meter or a cathode-ray oscillograph. In the latter case, however, this constitutes merely an initial check with the frequency modulator cable disengaged from the test oscillator. A vertical trace only will be observed on the oscillograph screen, the length of which is indicative of receiver output.

To complete the cathode-ray test, plug the frequency modulator cable into the "FREQ." jack of the oscillator and throw the "POWER MODULATION" switch to "EXT.," thus removing the amplitude modulation. Now apply power to the frequency modulator and adjust the test oscillator frequency until the forward and reverse images of the selectivity curve are visible on the oscillograph screen. To obtain this double-image pattern, the timing axis of the oscillograph must be set and locked with the external synchronizing control at the proper frequency (approximately 52 cycles per second).

Increase the test oscillator frequency until the highest point of the two images coincide and record the final setting of the test oscillator dial for future reference. Such readjustment of the test oscillator setting during this test is necessary to compensate for the capacitance of the frequency modulator cable plus one-half of the sweep capacitance employed. The following tabulation shows the approximate dial settings for several common test frequencies, using the RCA Stock No. 9558 Frequency Modulator. Such values are approximate, due to production variations in cable capacitance and the exact values should be recorded by the owner in the columns provided.

Test Frequency (KC)	Range (KC)	Dial Setting (KC)			
		"HI" Sweep Cap.		"LO" Sweep Cap.	
		Approx.	Exact	Approx.	Exact
175	100-260	264.5	......	232.5	......
180	100-260	——	......	243.0	......
260	260-625	291.0	......	283.5	......
445	260-625	——	......	596.0	......
455	260-625	——	......	619.0	......
460	260-625	——	......	629.0	......
465	260-625	——	......	650.0	......
600	625-1,550	667.5	......	650.0	......
1,000	625-1,550	1,475.0	......	1,307.0	......
1,400	625-1,550	1,533.0	......	1,500.0	......

The i-f trimmers should now be adjusted for maximum amplitude and complete symmetry of the two traces upon the oscillograph screen, such appearance indicating that the stage is symmetrically aligned with respect to the intermediate frequency supplied by the test oscillator. In cases where complete symmetry cannot be obtained and the amplitude increases rapidly upon approaching resonance, the trouble is apt to be due to regeneration in the i-f stages. Regeneration may be produced through coupling in the common power supply because of failure of a bypass capacitor, capacitance coupling between stages, absence of tube shields, improper placement of the input lead and in many other ways. Behavior of the oscillographic pattern in this manner is at least definitely indicative of trouble which must be corrected before a symmetrical alignment is possible. During the i-f alignment, the tuning dial of the receiver should be set at some point preferably near the low-frequency end of the scale where no interference is encountered either from broadcast stations or from the local heterodyne oscillator. For the cathode-ray test, a setting should be selected where variation of its position will have no effect on the oscillographic curves. In multi-range receivers, the range switch should be set for the standard-broadcast band.

R-F Alignment.—The r-f circuits of a superheterodyne type receiver or the cascade r-f stages of a tuned-radio-frequency type receiver are aligned in a manner similar to that described for i-f alignment. Suitable alignment points are usually recommended in the manufacturer's service notes.

In the case of the superheterodyne, the test oscillator and receiver dial first should be set at the low-frequency alignment point and the local oscillator in the receiver adjusted by means of the series trimmer capacitor. This trimmer should be set for maximum amplitude only, whether using an output meter or cathode-ray oscillograph. Using the visual method, no attempt should be made to obtain symmetry of the two curves on the screen.

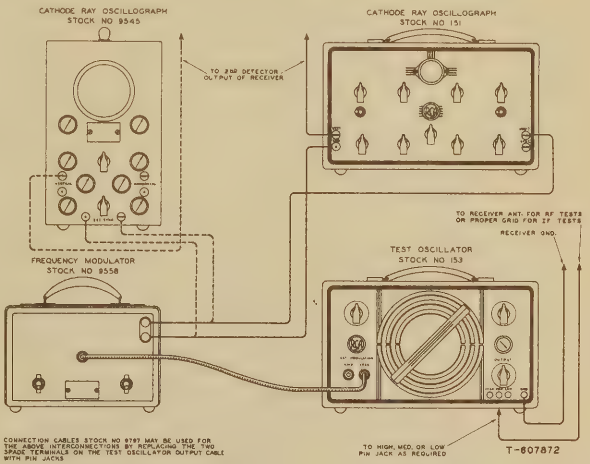

CATHODE RAY OSCILLOGRAPH
STOCK NO 9545
TO 2ND DETECTOR OUTPUT OF RECEIVER
CATHODE RAY OSCILLOGRAPH
STOCK NO 151
TO RECEIVER ANT. FOR RF TESTS OR PROPER GRID FOR IF TESTS
RECEIVER GND.
FREQUENCY MODULATOR
STOCK NO 9558
TEST OSCILLATOR
STOCK NO 153
OUTPUT
CONNECTION CABLES STOCK NO 9797 MAY BE USED FOR THE ABOVE INTERCONNECTIONS BY REPLACING THE TWO SPADE TERMINALS ON THE TEST OSCILLATOR OUTPUT CABLE WITH PIN JACKS
TO HIGH, MED, OR LOW PIN JACK AS REQUIRED
T-607872

Figure 2—Connections for Oscillograph Test

The test oscillator and receiver dial should then be shifted to the high-frequency alignment point and the parallel trimmer capacitor on the local oscillator adjusted until the output frequency of the latter is correct. This condition will be evidenced by maximum amplitude when using an output meter, or by approximate coincidence of the forward and reverse images on the screen of the cathode-ray oscillograph. The first detector (converter) and antenna trimmers now should be adjusted for maximum output or, using the visual method, for maximum amplitude and complete symmetry of the two oscillographic curves. If the latter trimmers are found to shift the output frequency (as indicated in the oscillograph test by separation of the two curves), the local oscillator parallel trimmer should be re-adjusted to compensate for this deviation.

Next, re-tune the receiver and test oscillator to the low-frequency alignment point and re-adjust the series trimmer on the local oscillator. During this adjustment, the variable tuning capacitor should be rocked slowly back and forth through the signal unless the visual method is being used. In the cathode-ray test, it is merely necessary to adjust the trimmer for maximum amplitude of the two curves, irrespective of their positions on the screen.

A final check of trimmer adjustments always should be made at the high-frequency alignment point. The sequence of operations as described above is important because of the greater effect exerted upon the high-frequency alignment settings by the local oscillator series trimmer than upon the low-frequency setting by the parallel trimmer.

Tuned-radio-frequency type receivers likewise should be aligned at two or more points through the band as recommended by the manufacturer, starting at the high-frequency end. As for the i-f stages of a superheterodyne, the cascade r-f stages in this type receiver are best aligned in their reverse order.

Oscillograph Test.—In order to interpret the results properly when using a cathode-ray oscillograph for receiver alignment, it is necessary to know the frequency range through which the circuit under adjustment is being swept. This range may be determined readily by reference to Figure 3 which shows the percentage of sweep for any dial setting. Since this information is presented as a single curve for each value of sweep capacitance, any dial setting referred to Figure 3 should be read upon the reference band (625-1,550 KC), irrespective of the band being used.

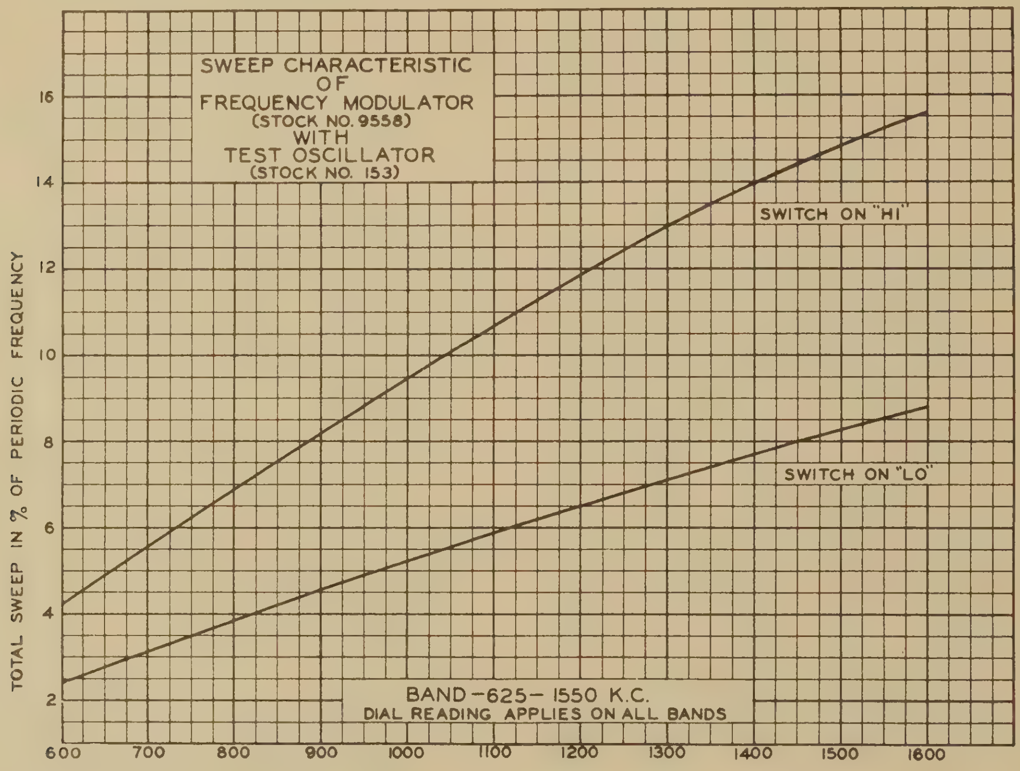


Figure 3—Sweep Characteristics, Using Stock No. 9558 Frequency Modulator

RECEIVER FIDELITY MEASUREMENTS

CONNECTIONS

To measure the overall response (fidelity) characteristics of a receiver, connect the output of the test oscillator across the antenna circuit and plug a beat-frequency oscillator (such as the RCA Stock No. 9633) into the "AMP." jack of the test oscillator. The beat-frequency oscillator employed should be capable of delivering an r-m-s output of 1.5 volts into a 30,000-ohm load for 30% modulation of the r-f signal. A suitable output meter or cathode-ray oscillograph should be connected to the output of the receiver.

PROCEDURE

Apply power to both oscillators, turning the "POWER-MODULATION" switch of the test oscillator to the "EXT." position.

Set the "RANGE" switch and dial of the test oscillator to 1,000 kc and tune the receiver to resonance with this signal. The r-f output should be adjusted to the desired level by selecting the most suitable output pin-jack and using the "OUTPUT" control.

Adjust the voltage output of the beat-frequency oscillator for the desired percentage of modulation. As noted under “Connections,” a potential of 1.5 volts will modulate the r-f signal approximately 30%. Approximately 1.8 volts will be required for 50% modulation.

Readings of output voltage from the receiver may now be taken, or observed on the cathode-ray oscillograph when employed, as the modulation frequency is varied in steps throughout the audible range. Since the modulation characteristic of the test oscillator is essentially flat up to 17,000 cycles, an accurate response curve may be plotted from such data.

CW AND AUDIO TESTS

CW TESTS

In tests where an r-f output without modulation is required, set the “POWER-MODULATION” switch to the position marked “EXT.” and leave the “AMP.” jack open.

AUDIO TESTS

The 400-cycle modulation voltage may be used externally for audio tests if desired by plugging into the “AMP.” jack and setting the “POWER-MODULATION” switch at “INT.” As noted heretofore, this potential appears across a high impedance (50,000 ohms), reaching a value of approximately 8 volts at no load. The output voltage under load obviously will depend upon the ratio of the load and output impedances.

CALIBRATION

The dial calibration is accurate to within 2%, which should be satisfactory in the majority of applications. Where greater accuracy is desired, the correction chart supplied loosely in this instruction book may be utilized to record the exact calibration. An exact calibration may be obtained, using the RCA Stock No. 9572 Piezo-Electric Calibrator.

CIRCUITS

Schematic and wiring diagrams for the Stock No. 153 Test Oscillator are shown on Figures 4 and 7, respectively. The circuit consists essentially of an electron-coupled r-f oscillator using an RCA-6J7 tube which is suppressor modulated at 400 cycles by an audio oscillator using an RCA-6C5 tube. An RCA-5W4 rectifier affords complete a-c operation, suppressor bias as well as the plate and screen voltages being procured from the power supply.

The r-f oscillator is of the Hartley type with compensation added to maintain a maximum output of approximately one volt over the entire frequency range. When using external modulation, the audio oscillator is converted to an audio amplifier which feature is highly advantageous for several reasons. Comprising these advantages are: (a) Lower audio input requirements for modulation; (b) isolation of the r-f amplifier from the external modulating source; (c) less r-f radiation; and (d) constant impedance load on the external modulating source.

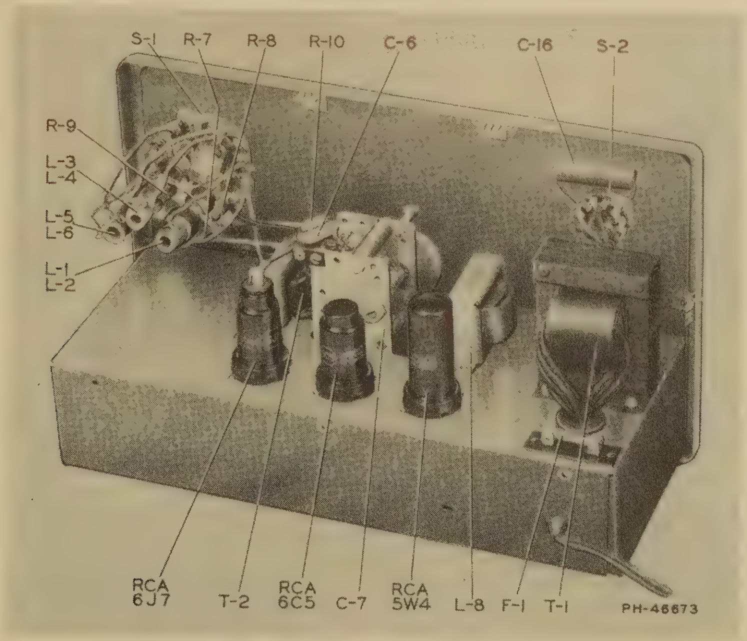


Figure 4—Panel and Chassis Assembly

MAINTENANCE

Caution: Disconnect the Power Supply Before Removing the Instrument Case to Replace Tubes or Make Service Adjustments

TUBE		Plate	Screen Grid	Suppressor Grid	Cathode	Filament or Heater
Type	Function					
RCA-6J7	R-F Osc.	+170 V. DC (pin 3)	+165 V. DC (pin 4)	—16.5 V. DC* (pin 5)	0 (pin 8)	6.3 V. AC (pin 2)
RCA-6C5	A-F Osc.	+100 V. DC (pin 3)	——	——	+8 V. DC (pin 8)	6.3 V. AC (pin 2)
RCA-5W4	Rectifier	330 V. AC +100 V. DC (pins 4, 6)	——	——	——	5.0 V. AC† +195 V. DC (pins 2, 8)

* Cannot be measured with ordinary meter.

† Heater to Heater.

TUBE SOCKET VOLTAGES

The normal voltages appearing at the respective tube-socket terminals with respect to chassis ground, using a 115-volt line supply, are shown in the foregoing tabulation. Pin numbers progress in a clockwise direction, starting from the key and viewing the bottom.

The above voltages are indicative of the proper operating conditions of the basic circuits and should not vary in excess of ±20%. Circuit defects ordinarily will be found in cases of greater variation. Such measurements should be made with an a-c/d-c voltmeter of high internal resistance (1,000 ohms per volt) having full-scale ranges of 30, 300 and 600 volts. The nearest range above the voltage to be measured should be employed.

FUSE

A small 1-ampere cartridge fuse provides protection of the power-supply system, and should not be replaced with one of higher rating or short-circuited. Fuse failures should be carefully investigated before replacement since a fuse of good quality fails only under conditions of overload. The fuse clips should be kept clean and in secure contact with the fuse at all times.

RESISTANCE AND CONTINUITY

The various photographs and diagrams contain such information as will be needed to locate causes for defective operation if such develops. The values of the various resistors, capacitors, and inductances are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles, such as R-3, L-2 and C-1, etc., are provided for reference between the illustrations and the Replacement Parts list. These identifications are in numerical order from left to right on the schematic diagram, thus facilitating the location of specific parts.

The coils, reactors, and transformer windings are rated in terms of their d-c resistances. This method of rating provides a ready means for checking the continuity of circuits. Suspected faulty circuits or parts may be checked and their resistances compared with the value given on the schematic diagram. Failure of operation may result from:

1. Power supply being "OFF."
2. Open fuse within the instrument.
3. Defective tubes.
4. Defects within the instrument itself.

Low power or improper calibration may result from:

1. Improper alignment of the various circuits.
2. Defective tubes.
3. Improper setting of control knobs on shafts.
4. Defects within the instrument itself.

R-F ALIGNMENT

In the event of tube replacement, the calibration may be returned to its former value by adjustment of the compensating trimmer (C-8) located on the bottom of the main tuning capacitor (C-7). This adjustment should be made on the *third* band at 1,600 kilocycles with the chassis in its case. A hole is provided in the bottom of the case for making this adjustment.

Pointer Adjustment—At the maximum capacity position of the main tuning capacitor, the dial pointer should be exactly horizontal. The pointer setting may be adjusted upon loosening its mounting screw at the center.

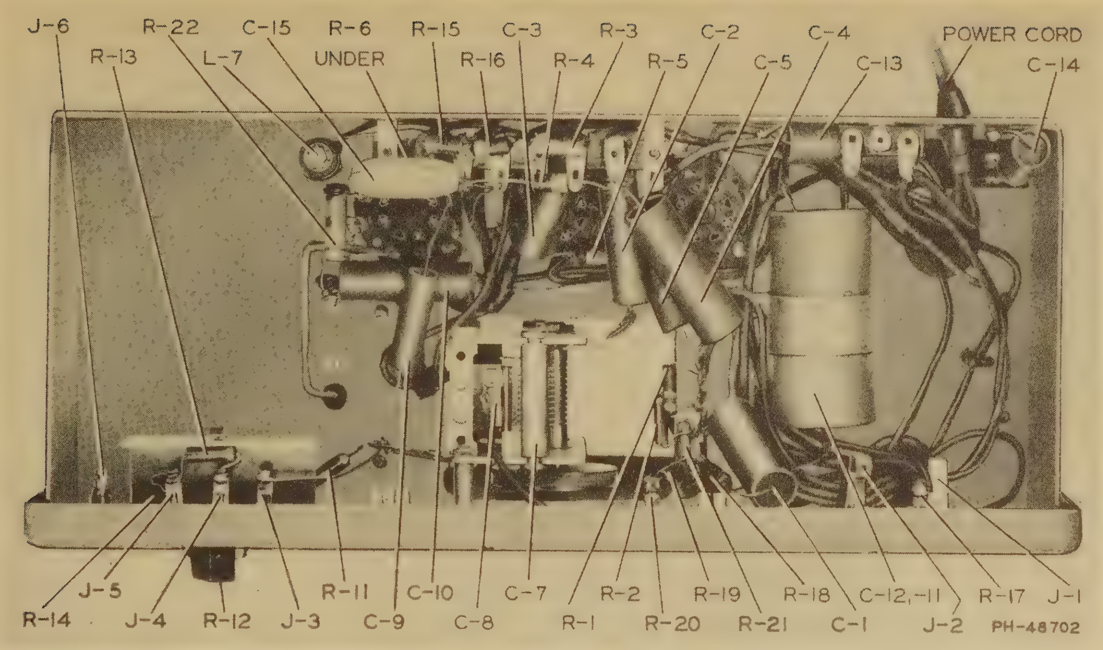


Figure 5—Bottom View of Chassis

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION
14384	Belt—Tuning capacitor drive belt
30913	Capacitor—9 to 411 mmfd. variable capacitor, complete with 2.5 to 27.5 mmfd. trimmer capacitor (C-7, C-8)
12725	Capacitor—150 mmfd. (C-6)
30057	Capacitor—2,700 mmfd. (C-15)
4838	Capacitor—0.005 mfd. (C-9)
4858	Capacitor—0.01 mfd. (C-3)
4886	Capacitor—0.05 mfd. (C-13, C-14)
4839	Capacitor—0.1 mfd. (C-2, C-5, C-10, C-16)
12484	Capacitor—0.25 mfd. (C-1, C-4)
14120	Capacitor—Comprising two sections each 4 mfd. (C-11, C-12)
30914	Coil—Oscillator coil (L-1, L-2)
30915	Coil—Oscillator coil (L-3, L-4)
30916	Coil—Oscillator coil (L-5, L-6)
30917	Coil—Peaking coil (L-7)
30926	Foot
14133	Fuse—1 ampere (F-1)
30925	Handle—Carrying handle
30924	Indicator—Dial pointer
11780	Jack—"EXT. MODULATION" jacks (J-1, J-2)—Phone jack
30920	Jack—"HIGH," "MED." and "LOW" jacks (J-3, J-4, J-5)—Output jack
30921	Jack—"GND." pin jack, complete with one hex nut (J-6)
7960	Knob—Bar pointer knob
30923	Knob—Tuning knob
13210	Mounting—Fuse mounting
30922	Panel—Escutcheon and dial scale
13985	Potentiometer—"OUTPUT" control, 2,000 ohms (R-12)
14636	Pulley—Idler pulley
13111	Reactor—Filter reactor (L-8)
13988	Resistor—10 ohms, ¼ watt (R-14)
13961	Resistor—82 ohms, ½ watt (R-22)
13454	Resistor—270 ohms, ¼ watt (R-15)
12267	Resistor—1,200 ohms, ¼ watt (R-13)
12194	Resistor—1,800 ohms, ¼ watt (R-6)
14024	Resistor—2,700 ohms, ¼ watt (R-16)
12312	Resistor—3,300 ohms, ¼ watt (R-11)
12748	Resistor—10,000 ohms, ¼ watt (R-9)
30128	Resistor—12,000 ohms, ¼ watt (R-7)
12695	Resistor—15,000 ohms, ¼ watt (R-8)
30912	Resistor—Comprising one section of 15,000 ohms and one section of 4,700 ohms (R-17, R-20)
12738	Resistor—27,000 ohms, ¼ watt (R-4)
12454	Resistor—33,000 ohms, ¼ watt (R-5)
12412	Resistor—47,000 ohms, ¼ watt (R-3, R-10)
12749	Resistor—56,000 ohms, ¼ watt (R-2)
13715	Resistor—68,000 ohms, ¼ watt (R-18)
14020	Resistor—150,000 ohms, ¼ watt (R-1)
14983	Resistor—330,000 ohms, ¼ watt (R-19)
12285	Resistor—470,000 ohms, ¼ watt (R-21)
31251	Socket—Octal base tube socket
14637	Spring—Idler take-up spring
30927	Spring—Panel-to-case contact spring
30919	Switch—"POWER MODULATION" switch (S-2)
30918	Switch—"RANGE" switch (S-1)
3979	Transformer—Oscillator transformer (T-2)
9556	Transformer—Power transformer (T-1)

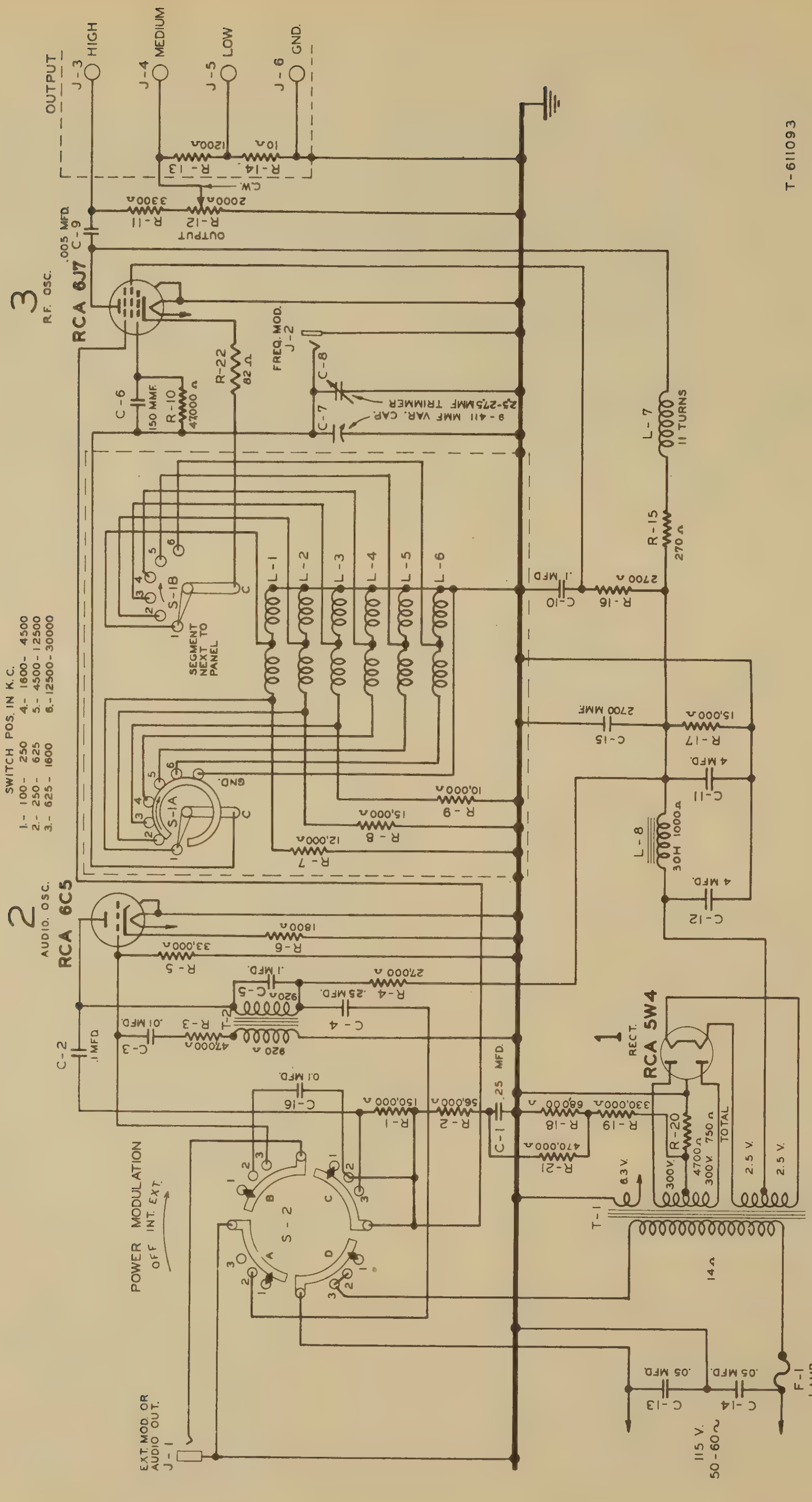


Figure 6—Schematic Circuit Diagram

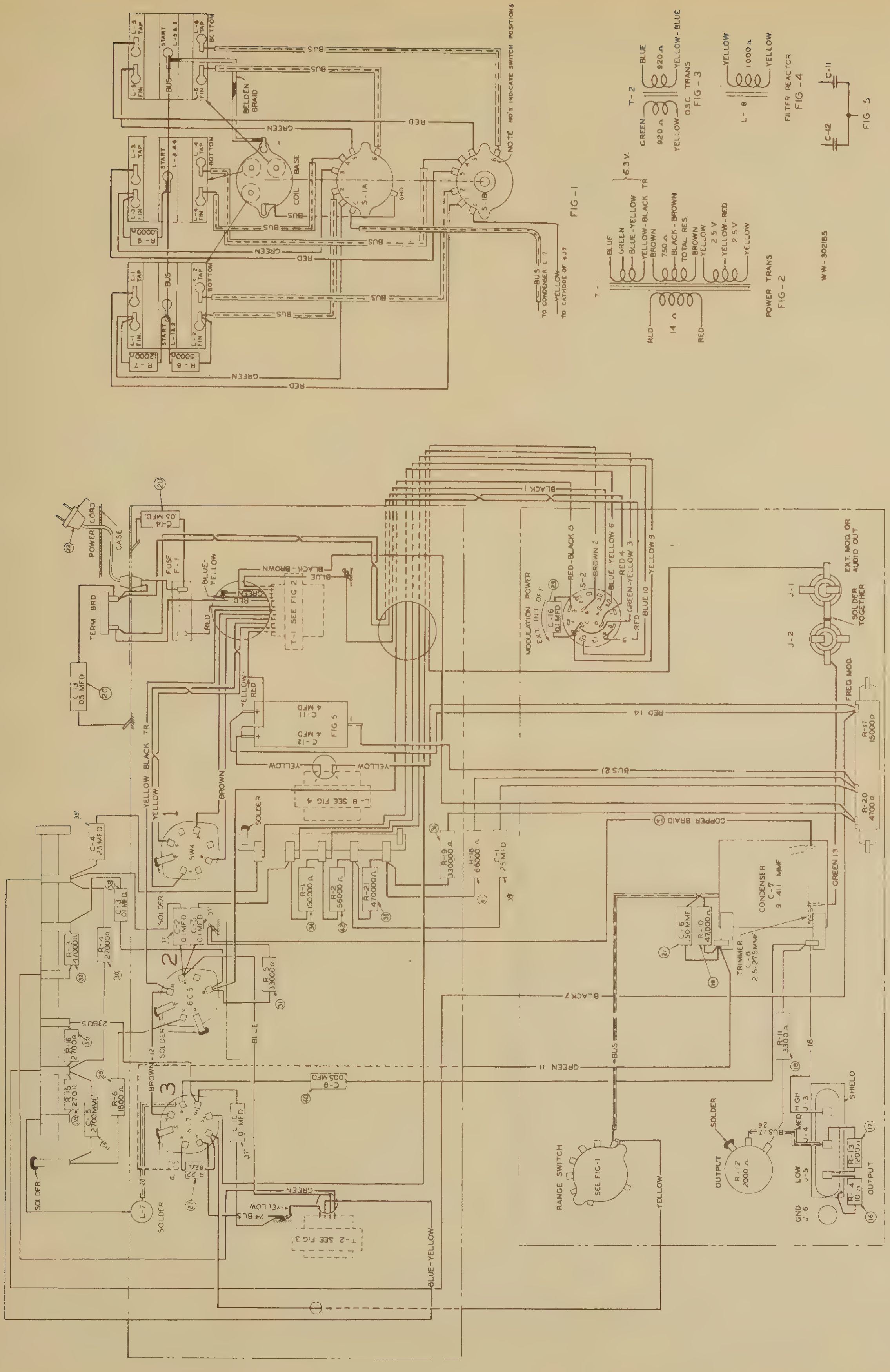


Figure 7—Chassis Connection Diagram

Stock No. 154 Beat-Frequency Oscillator

ELECTRICAL CHARACTERISTICS

Frequency Range .... 30 to 15,000 cycles

Power Output .... 125 milliwatts

Voltage Output:

Load Impedance	Output Voltage
Open Circuit	37.5 volts
5,000 ohms	25.0 volts
500 ohms	7.5 volts
250 ohms	5.2 volts

Response Characteristics:

Load Impedance	* Output Variation 30—10,000 cycles	30—15,000 cycles
5,000 ohms	±1 db	+1, −2 db
500 or 250 ohms.	±1 db	+1, −3 db

* Volume control maximum.

Distortion .. Under 5% (r-m-s) over entire frequency range

Hum .. 60 db below maximum output (approximate)

Tube Complement:

Function	Type
R-F Oscillators	2 RCA-6J7
Detector	1 RCA-6C5
A-F Output Amplifier	1 RCA-6J5
Rectifier	1 RCA-5W4

Power Supply Requirements .. 110-120 volts, 50-60 cycles, 35 watts.

Protective Fuse Rating .... 1 ampere

MECHANICAL SPECIFICATIONS

Dial .. Full-vision type (approximately 8″ diameter)

Dimensions .... 13¾″ length x 9¼″ height x 6½″ depth, overall

Weight .... 15 pounds

Finish .... Baked lacquer, fine blue-gray wrinkle

IMPORTANT

Upon unpacking this instrument, remove the chassis from the case and inspect the tubes, grid-cap connections and fuse. The chassis may be withdrawn after removing the three screws in the back of the case. Replace the chassis and tighten the three screws before operating.

DESCRIPTION

The Stock No. 154 Beat-Frequency Oscillator is a portable, self-contained instrument for generating voltages in the audio-frequency range of 30 to 15,000 cycles. It operates entirely from an a-c source of 110-120 volts, 50-60 cycles and requires only 35 watts. Provision is made for calibrating against the power-supply frequency, which method affords exceptional accuracy and utmost convenience. No calibration meter or dial is employed, a neon lamp indicator serving to register synchronization with the supply frequency. At multiples or sub-multiples of the latter frequency, it is possible to check the oscillator frequency to better than one part in one hundred. The neon lamp also functions as a pilot lamp to indicate whether power is being applied to the instrument.

Another important feature is found in the output transformer, which enables optimum load matching between the oscillator output and the most frequently encountered impedances; namely, 5,000 ohms, 500 ohms and 250 ohms. This transformer is center-tapped for proper operation on balanced-to-ground lines. For unbalanced measurements, additional impedances of 1,250 ohms, 125 ohms and 62.5 ohms are obtainable from the center tap to either side of each winding.

Although adaptable to a wide variety of applications, this instrument is especially useful in measuring the fidelity of radio receivers, the frequency response of audio amplifiers, the frequency characteristics of audio transformers and filters, and the modulation characteristics of amateur transmitters. It also may be used to advantage in determining frequencies and mechanical speeds. Such applications and the respective methods of use are described under the section entitled "Applications."

CALIBRATION

Insert the power cord into an electrical outlet supplying power at the proper voltage and frequency (110-120 volts, 50-60 cycles). Turn the "POWER" switch to "ON" and the "INDICATOR" switch to "USE." The neon lamp should now be observed to glow, denoting that power is being applied.

Although the oscillator will be operative after the tubes are heated, which requires approximately one minute, a much longer delay is recommended to insure proper stability. Stable operation is possible, as in any equipment of this nature, only after the component parts of the unit have reached a steady operating temperature. The time to attain this condition will vary, depending upon the ambient temperature of the room, and may be from one-quarter to one-half hour.

It is necessary that the calibration of the oscillator be checked and adjusted as required before each operating period. To calibrate, turn the "INDICATOR" switch to "CAL." and advance the "OUTPUT" control to its maximum clockwise position. Set the main tuning control to the frequency of the power supply and rotate the "CAL. ADJ." knob back and forth until a point is found where the neon lamp ceases to glow. *This setting is used as a reference position only.* Now turn the "CAL. ADJ." knob slowly clockwise from this reference position, observing the action of the neon lamp. Normally, the lamp will flicker slowly at first, then will speed up and finally slow down to a very few brilliant flashes per second with both plates of the lamp glowing at simultaneous intervals. The proper setting is that where flashing occurs at a minimum rate and will be found approximately 1/16 inch from the *reference* position, as measured at the outer circle of the scale.

To check this calibration, advance the main tuning control to a setting corresponding to twice the power-supply frequency. The neon lamp should glow steadily, but the plates of the lamp should start to flash alternately (first one plate and then the other) upon moving the main tuning control slightly above or slightly below this setting if the calibration is correct. These flashes will not be as bright as for the calibration (fundamental supply frequency) position. The "OUTPUT" control should be reduced during this check.

A cathode-ray oscillograph, such as the RCA Stock No. 9545 (Type TMV-122-B) or the RCA Stock No. 151, may be employed to advantage in calibrating this beat-frequency oscillator. Connect the 5,000-ohm terminals of the oscillator to the vertical input terminals of the oscillograph. Using the Stock No. 9545 oscillograph, set the synchronizing switch to the central (60-cycle) position and adjust the sweep oscillator to 60 cycles; with the Stock No. 151 oscillograph, it will be necessary to connect an external 60-cycle source (approximately, 2 volts r. m. s.) to the "HORIZ." and "GND." binding posts and adjust the sweep oscillator to 60 cycles. Set the main tuning control of the oscillator to the power-supply frequency and rotate the "CAL. ADJ." knob back and forth until a point is found where the oscillographic trace appears as a straight horizontal line. *This setting is used as a reference position only.* Now turn the "CAL. ADJ." knob slowly clockwise until a single cycle of a sine wave appears on the oscillograph screen. The proper setting should occur at approximately 1/16 inch from the *reference* position, as measured at the outer circle of the scale.

To check this calibration, advance the main tuning control to a setting corresponding to twice the power-supply frequency. Two cycles of the sine wave should be observed on the oscillograph screen at this setting if the calibration is correct.

> NOTE: It is possible to obtain an indication of correct calibration when the "CAL. ADJ." knob is turned *counterclockwise* from the reference position. Such an adjustment is erroneous as will be revealed by the check at twice the power-supply frequency since the neon lamp will cease to glow. If the cathode-ray oscillograph is being employed, the trace will appear as a straight horizontal line.

When correctly calibrated, the frequency will increase upon turning the main tuning control clockwise from the 30-cycle mark. Incorrect calibration will be evidenced by a condition of decreasing frequency from the 30-cycle mark to a dial setting of twice the power-supply frequency beyond which the frequency increases. *The latter is to be avoided.* With a little practice, the correct calibration point will be readily distinguished. A pair of headphones connected across the 5,000-ohm terminals may be used to listen to the signal while becoming familiar with the calibration process.

After calibrating, the "INDICATOR" switch should be turned to the "USE" position, which renders the oscillator ready for operation.

EXTENDED RANGE

This beat-frequency oscillator may be used to produce frequencies below 30 cycles by calibrating with the main tuning control set 20 cycles higher than the power-supply frequency. When so operated, all frequencies below that point will be 20 cycles less than the scale reading.

CONNECTIONS

In connecting the oscillator to the apparatus under test, select that pair of output terminals whose marking (5,000, 500, or 250) is comparable to the load impedance. It is desirable that the load impedance shall be equal to that of the instrument, but if an exact match cannot be obtained, use the terminals of next *lower* impedance than the load.

The output transformer of this oscillator is center-tapped for use with lines or circuits which are balanced to ground. Since the center tap is not grounded, it will be advisable, in the event that hum is encountered, to try various grounding combinations —that is, from the case of the instrument or center-tap, or both, to the grounded side of the device being tested. If, in the latter equipment, one side of the input circuit is grounded, the oscillator output center-tap should be left ungrounded unless it is employed for connection to the ground side. On balanced input lines, where the center-tap of the device under test is grounded, best results usually will be obtained by connecting the center-tap of the oscillator to the same ground point as the former.

Shielded and twisted leads ordinarily are advantageous when protection against hum pickup is necessary, or when the leads must be run over a considerable distance from the oscillator.

APPLICATIONS

Several general applications in which this beat-frequency oscillator can be employed are outlined below. Figures 2 to 6 show methods of connection and means of measurement for these applications. The two meters used for audio-frequency measurements may be vacuum-tube voltmeters or rectifier-type a-c meters capable of measuring high audio frequencies. The same type meters should be used in each position for greatest accuracy.

RADIO RECEIVER FIDELITY CHARACTERISTICS

The over-all electrical fidelity characteristic of a radio receiver may be determined by applying a modulated r-f signal to the antenna stage and measuring the output voltage (at various modulating frequencies) across the loudspeaker voice coil.

Connect the 250-ohm output terminals of the beat-frequency oscillator to an r-f test oscillator which is capable of being externally modulated. The RCA Stock No. 153 Test Oscillator has a jack provided for this purpose. Connect the output terminals of the test oscillator to the antenna and ground terminals of the receiver under test. Turn the receiver volume control to its *minimum* position. Connect a suitable a-f voltmeter across the 250-ohm terminals of the beat-frequency oscillator and another similar meter across the loudspeaker voice coil. The arrangement is shown by Figure 2.

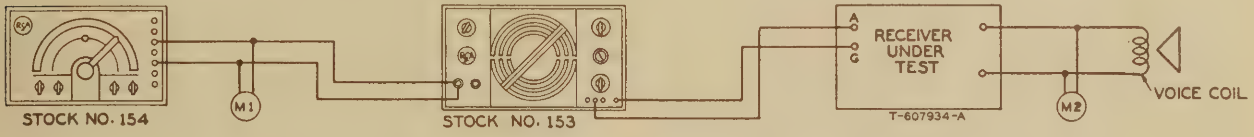


Figure 2—Connections for Radio Receiver Fidelity Measurements

Set the test oscillator to 1,000 kc and adjust its output to deliver approximately 2 millivolts into the receiver antenna stage. With the Stock No. 153 Test Oscillator, this output will be obtained using the "LOW" output terminal and setting the "OUTPUT" control approximately at "1." Set the beat-frequency oscillator to a frequency between 3,500 and 5,000 cycles to give best indication on the meter as explained below, and adjust its output to 1.5 volts (required for 30% modulation of the Stock No. 153 Test Oscillator). Tune the radio receiver to the 1,000-kc signal and advance its volume control until the meter across the voice coil shows an observable indication. Tune the receiver back and forth through the signal, noting that two peaks will be observed on the meter. These peaks indicate the side-band responses. The receiver then should be carefully tuned to the lowest meter reading between the peaks, at which point it will be precisely tuned to the test-oscillator frequency. Now, shift the audio-frequency to 400 cycles, maintaining the oscillator output at 1.5 volts. Adjust the receiver volume control until the power delivered to the loudspeaker voice coil is 0.1 watt. Knowing the voice-coil impedance, the voltage (E) required across the voice coil to obtain this power may be calculated by the formula:

$$E = \sqrt{WZ} \qquad (1)$$

where W is the desired output in watts and Z is the impedance of the voice coil in ohms.

Example: If the desired output is 0.1 watt and the voice-coil impedance is 3 ohms, the voltage (E) would be:

$$\sqrt{0.1 \times 3} = \sqrt{0.3} = 0.55 \text{ volt.}$$

By rearranging the above formula (1), the power (W) in watts delivered to the voice coil may be derived as follows:

$$W = \frac{E^2}{Z} \qquad (2)$$

and using the same values as above, the power (W) would be:

$$\frac{0.55^2}{3} = \frac{0.3}{3} = 0.1 \text{ watt.}$$

After setting the volume control to obtain the specified output at 400 cycles, vary the beat-oscillator frequency through the desired audio range, keeping the oscillator output at 1.5 volts, and record the variations of the voltage across the loudspeaker voice coil.

AUDIO AMPLIFIER FREQUENCY RESPONSE

In measuring the frequency response of an audio amplifier, the test procedure is generally the same as for the fidelity of a radio receiver except that no r-f test oscillator is used. Figure 3 shows the general arrangement. The output of the beat-frequency oscillator may be fed directly into the input of the audio amplifier, or, when the input voltage required for the amplifier is so low that it is practically impossible to measure it with an ordinary voltmeter, an attenuator should be used. This will establish a definite ratio between the output voltage of the beat-frequency oscillator and the input voltage fed to the amplifier.

Normally, either of two types of attenuators may be used, and each type has its particular advantage. If one side of the amplifier input is grounded, the arrangement shown at the left may be used. The value of $R_1 + R_2$ should be equal to or greater than the impedance across the output terminals of the beat-frequency oscillator to which they are connected (i. e., 250 ohms total for 250-ohm taps, 500 ohms

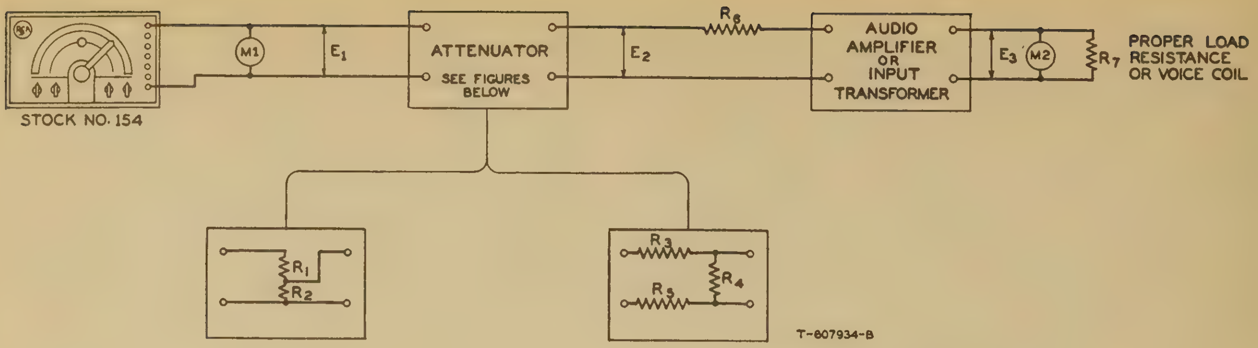


Figure 3—Connections for Measurement of Audio Amplifier Frequency Response

total for 500-ohm taps, or 5,000 ohms total for 5,000-ohm taps). The ratio of resistance R_2 to the total resistance $(R_1 + R_2)$ will determine the voltage (E_2) which is applied to the amplifier when the oscillator output voltage (E_1) is known. Resistance R_2 always should be less than one-twentieth of the input impedance of the amplifier.

Example: Assume the input voltage (E_2) to an audio amplifier for rated output is 0.1 volt. Using the 5,000-ohm terminals of the oscillator, $R_1 + R_2$ should be 5,000 ohms. A convenient value of output for these terminals is 10 volts. The voltage ratio between the output of the oscillator and the input of the amplifier will then be 100 to 1. Resistance R_2, therefore, should be $R_1 + R_2/100$ or 50 ohms, and resistance R_1 should be 5,000—50 or 4,950 ohms. This example is given as a guide for calculating the values of resistance needed. Any combination of resistance values may be worked out to give the required input voltage.

The voltage gain of an amplifier is the ratio of the output voltage to the input voltage. Using the attenuator, in which the values of R_1 and R_2 are known, the gain (G) may be calculated from the readings of the two meters in the circuits of Figure 3 by the formula:

$$G = \frac{E_3}{E_1} \times \frac{R_1 + R_2}{R_2} = \frac{E_3 \, (R_1 + R_2)}{E_1 \, R_2} \qquad (3)$$

NOTE: In this formula, the matching impedances (R_6 and R_8) are not considered, and the result is therefore only approximate.

Example: Assuming E_3 to be 5 volts and using the constants in the above example, the gain would be:

$$\frac{5 \; (4{,}950 + 50)}{10 \text{ x } 50} = \frac{5 \text{ x } 5{,}000}{500} = 50$$

When the input circuit to the amplifier is balanced-to-ground, the attenuator shown at the right should be used. The values of R_3 and R_5 should be equal, and for the calculations above, $R_3 + R_5$ should be equal to R_1, so that the ratio of R_4 to the total resistance $(R_3 + R_4 + R_5)$ is the same as the ratio of R_2 to the total resistance $(R_1 + R_2)$.

The value of the resistance feeding the input of the amplifier (R_2 as shown at left, or R_4 as shown at right) should always be less than one-twentieth the value of the input impedance of the amplifier. The amplifier input may consist of a transformer, resistor, or tube load.

When an input transformer is incorporated in the amplifier, a resistance (R_6), equal to the input impedance of the amplifier, should be placed in series with the amplifier input to provide proper impedance matching. The output of the audio amplifier should be connected to the speaker voice coil, or to an equivalent load resistor (R_7). The decrease in the output load impedance caused by the meter should be taken into consideration for best accuracy.

AUDIO TRANSFORMERS AND FILTER CHARACTERISTICS

The arrangement of Figure 3 for audio amplifiers also is applicable to input transformers. In such cases, the value of resistance (R_6) should be equal to the input impedance of the transformer, and the load on the secondary should be equal to the load into which it works. Where it connects directly to a tube, a vacuum-tube voltmeter will approximate the tube load and will be the only loading required. Normally, the step-up ratio is high, and an attenuator should be used. Calculations for gain will be the same as for amplifiers.

For audio interstage and output transformers (except push-pull), it may be necessary to pass current through the primary winding, using a battery as shown in Figure 4. The battery voltage should be such that the current is equivalent to the normal current under operating conditions. This current is measured by a d-c milliammeter (M-3) inserted in series with the primary. Resistance R_8 should be equal to the plate impedance of the tube from which the transformer works, and resistance R_9 should be equivalent to the secondary loading (normally, the capacity between tube elements). A vacuum-tube voltmeter will approximate this load and must be used in cases where resistance R_9 is high. Any special loading on either the primary or the secondary should be duplicated if the performance in a particular circuit is to be measured. A capacitor (C_1) should be

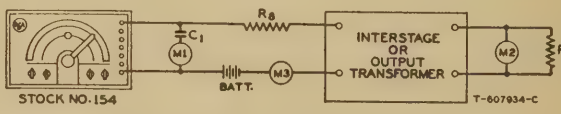


Figure 4—Audio Transformer Test Connections

connected in series with the meter (M-1) to block out the d-c current which would otherwise introduce error. The battery polarity should be such as to give the highest reading on meter M-1 at 30 cycles. For interstage transformers, the 250-ohm terminals on the oscillator should be used; for output transformers the 5,000-ohm terminals should be used.

For filters, the resistances R_8 and R_9 should be equal respectively to the characteristic impedances of the input and output circuits of the filter, or the impedances which the filter works from and into. Where resistance R_9 is high, meter M-2 should be a vacuum-tube voltmeter. For lower impedance values, the resultant resistance of M-2 and R_9 in parallel must be equal to the output impedance of the filter.

For transformers having push-pull primaries, resistance R_8 should be equal to the sum of the plate resistances of the tubes from which the transformer works and the total primary connected to the circuit. When the transformer has a push-pull secondary, the voltmeter and load should be connected across the total winding.

For output transformers (not push-pull) resistance R_9 should be equal to the voice-coil impedance of the speaker for which it was designed.

AMATEUR TRANSMITTER MODULATION CHARACTERISTICS

When taking the modulation characteristics of an amateur transmitter, some type of modulation indicator is necessary. The most convenient device for this purpose is a cathode-ray oscillograph such as the RCA Stock No. 9545 (Type TMV-122-B), or the RCA Stock No. 151. Connect the beat-frequency oscillator to the transmitter microphone transformer (one 5,000-ohm terminal to high side, and center-tap to transmitter ground) as indicated in Figure 5. Also, connect the oscillator as shown to the oscillograph, using the "EXT. SYNC." terminals of the Stock No. 9545, or the "HORIZ." and "GND." terminals of the Stock No. 151. Place a pickup coil near the output of the power amplifier stage of the transmitter and connect it to the vertical input of the oscillograph.

The audio voltage from the beat-frequency oscillator should then be held constant to give the desired percentage modulation at a given audio frequency, normally 1,000 cycles. The sweep-frequency oscillator in the oscillograph should be adjusted to give approximately three patterns on the screen. Data is then taken on the deviation in percentage modulation with variation in audio frequency. The procedure for measuring the percentage modulation is fully covered in the instructions on each oscillograph.

FREQUENCY MEASUREMENTS

Frequencies from a few cycles up to 150 kilocycles may be measured with this instrument in conjunction with a cathode-ray oscillograph. This information is completely explained in the instruction books for the RCA Stock No. 9545 and Stock No. 151 Oscillographs.

STROBOSCOPIC SPEED MEASUREMENTS

The speed of rotating shafts, motors, etc., may be readily measured with this instrument, using an arrangement as shown in Figure 6. A stroboscopic disc, consisting of alternate and equally divided black and white spaces, should be placed on the rotating member. The number of black spaces required will vary inversely with the speed, and can be readily chosen by trial in the formula for speed (S):

$$S = \frac{60 \times f}{n} \text{ r.p.m.} \qquad (4)$$

where f = frequency in cycles,
n = number of black sections.

Example: If n = 4 sections and f = 60 cycles, the speed (S) would be:

$$\frac{60 \times 60}{4} = 900 \text{ r.p.m.}$$

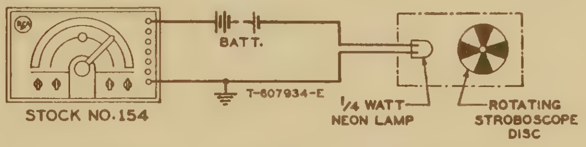


Figure 6—Speed Test Connections

The additional equipment required for these measurements is a battery of about 45 volts and a 1/4-watt neon lamp. The neon lamp should be held close to the disc and the frequency of the oscillator varied until the segments appear motionless and normal in width.

In some cases, more than 45 volts may be used. This can best be determined by turning the oscillator output control to its minimum position and connecting enough battery so that the neon lamp just glows. Then reduce this battery potential by approximately 10 volts and the desired results are obtained.

When the rotating members are wheels, with spokes or gears, this can be done directly if the teeth or spokes are painted white. Then the number of spokes or teeth is "n" in the formula.

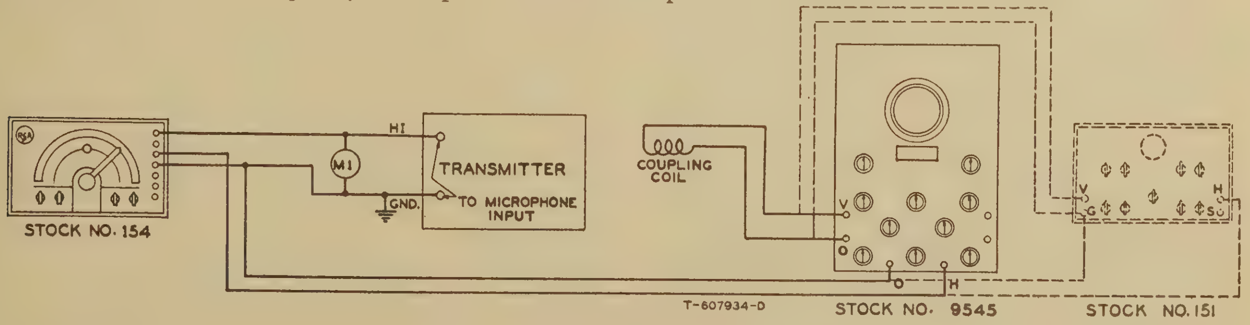


Figure 5—Connections for Measurement of Modulation Characteristics

CIRCUITS

Schematic and wiring diagrams for the Stock No. 154 Beat-Frequency Oscillator are shown in Figures 7 and 10, respectively. The instrument relies for operation upon the heterodyne or beat-frequency principle, incorporating two r-f oscillators—one fixed and the other variable. The outputs of these oscillators are combined in a heterodyne detector to produce the desired audio frequency, which signal is amplified and fed to a load-matching output transformer.

The fixed r-f oscillator stage, consisting of a self-biased RCA-6J7 tube and its associated circuit elements, oscillates at a frequency of 350 kc; the second and third grids of this tube operate as the oscillator plate. The plate (termed "work plate") is electron coupled to the oscillation-generating portion of the tube and feeds into the primary of the i-f transformer. The secondary of this i-f transformer is connected in series with the cathode of the self-biased RCA-6C5 detector tube, which provides detector-cathode modulation at the frequency of the fixed oscillator.

The variable r-f oscillator stage utilizes a circuit similar to that of the fixed oscillator, except that the main tuning control (C-12) is connected across coil L-6 and provides the required variation of capacitance to change the frequency from 30 to 15,000 cycles below that of the fixed oscillator. The electron-coupled work plate is resistance-capacitance coupled to the grid of the RCA-6C5 detector tube. This provides detector-grid modulation at the frequency of the variable oscillator.

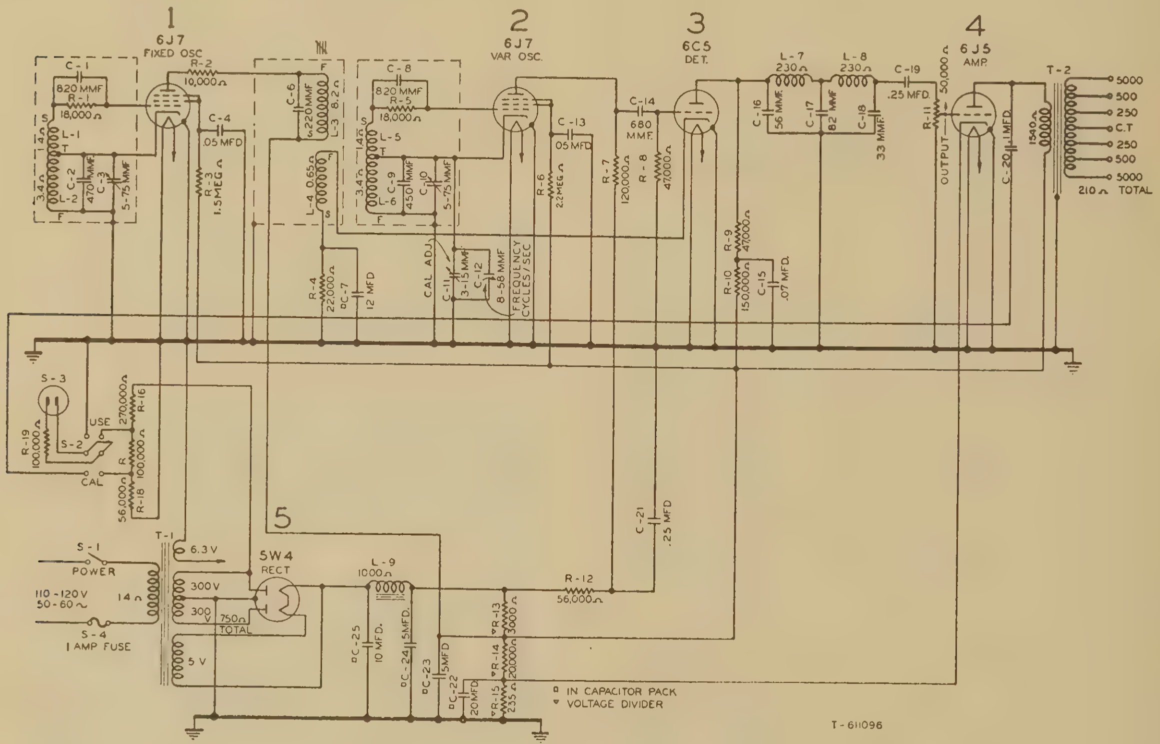


Figure 7—Schematic Circuit Diagram

Use of electron coupling in each oscillator circuit provides good stability and effectually prevents external circuit effects reflecting to the oscillator circuits, which would otherwise have a tendency to cause frequency drift, instability, and non-uniform output.

The two r-f oscillator signals entering the detector, one at the cathode circuit and the other at the grid circuit, are thus combined to produce the desired audible (beat) frequency. The detector output is fed to the control grid of the RCA-6J5 fixed-bias amplifier through a two-stage r-f filter. This filter allows only the detected audio voltage to be applied to the amplifier grid. The output control (R-11) is connected in the grid circuit of the amplifier stage, and allows continuous control of the output voltage. The output of the amplifier stage is then fed into a statically-shielded output transformer. This transformer is designed to work into loads of 250, 500, or 5,000 ohms. A center-tap is provided so that lines or circuits of these impedances may be balanced to ground.

The power supply consists of an RCA-5W4 full-wave rectifier working into a capacitor-input filter circuit. The output of this filter circuit supplies the d-c voltages required for the various circuits of the apparatus.

A neon lamp is incorporated for use either as a pilot lamp or as a calibration indicator, depending on the position of the "INDICATOR" switch. In the "CAL." position, a portion of the a-c voltage from the high-voltage winding of the power transformer is impressed on one plate of the neon lamp from the junction of resistors R-17 and R-18 through a 100,000-ohm resistor (R-19). The other plate of the neon lamp is connected through capacitor C-20 to the output of the RCA-6J5 amplifier. Proper calibration is indicated when the two frequencies applied to the neon lamp are the same. The lamp will then remain lighted continuously or remain out continuously, depending on the phase relation of the applied voltages. When the frequencies are nearly the same, both plates of the lamp will flash together at the difference frequency. In the "USE" position, the neon lamp is connected from the junction of resistors R-16 and R-17 to ground and acts as a pilot lamp. A small air condenser (C-11) is connected in parallel with the main tuning control to change the frequency of the variable oscillator for setting the calibration point.

MAINTENANCE

Caution: Disconnect the power supply before removing the instrument case to replace tubes or make service adjustments.

TUBE SOCKET VOLTAGES

Operating conditions of the basic circuits of this instrument may be determined by measuring the voltages applied to the tube elements. Figure 8 shows the voltage values from the socket contacts to ground, while Figure 9 shows the oscillator grid voltages as measured to chassis ground. Each value as specified should hold within ±20% when the instrument is normally operative with all tubes intact and rated voltage applied. Variations in excess of this limit will usually be indicative of trouble.

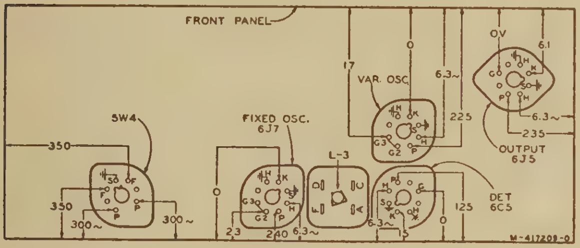


Figure 8—Tube Socket Voltage Diagram

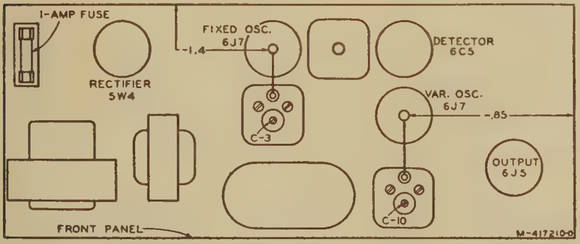


Figure 9—Chassis Layout Diagram

The voltages given on these diagrams are actual measured values and are the results obtained after the loading of the circuit (by the voltmeter) has taken place. To fulfill the conditions under which these voltages were measured requires a 20,000-ohm-per-volt, a-c/d-c voltmeter having ranges of 10, 50, 100 and 500 volts. Use the nearest range above the voltage to be measured.

FUSE

A small 1-ampere cartridge fuse is employed to protect the power-supply system, and is located adjacent to the RCA-5W4 rectifier tube on the top side of the chassis. In the event of failure, this fuse should not be short-circuited or replaced by one of a higher rating. Fuse failures should be carefully investigated before replacement, since a fuse of good quality will fail only under conditions of overload. The fuse clips should be kept clean and in secure contact with the fuse at all times.

RESISTANCE AND CONTINUITY

The various diagrams given in this booklet contain such information as will be needed to locate causes for defective operation if such develops. The values of the various resistors, capacitors, and inductances are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles, such as R-3, L-2, C-1, etc., are provided for reference between the illustrations and the Replacement Parts List. These identifications, in general, progress in numerical order from left to right on the schematic diagram, and thus are readily located.

The coils, reactors, and transformer windings are rated in terms of their d-c resistance. This method of rating provides a ready means for checking the continuity of circuits. Suspected faulty circuits or parts may be checked and their resistances compared with the values given on the schematic diagram. Failure of operation may result from:

(1) Power supply being "off."
(2) Open fuse within the instrument.
(3) Defective tubes.
(4) Defects within the instrument itself.

R-F ALIGNMENT

Correct alignment of both oscillator circuits is necessary for proper frequency calibration, and correct adjustment of the i-f transformer primary trimmer is essential for proper output. All of these circuits should be properly adjusted every six months,

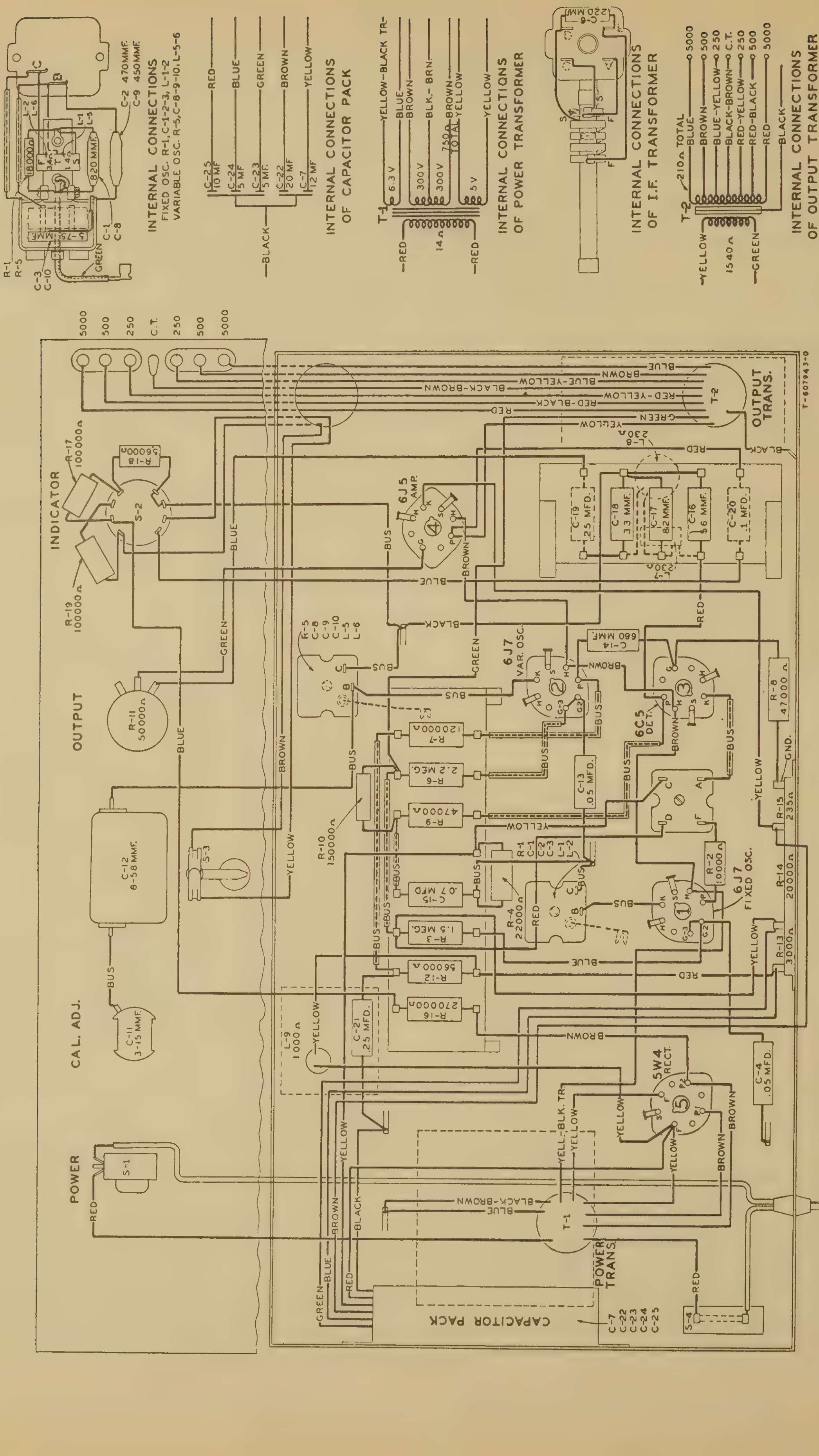


Figure 10—Chassis Connection Diagram

or immediately after any repairs or replacements have been made which affect the oscillator circuits. If either or both of the RCA-6J7 oscillator tubes have been interchanged or replaced, these circuits should be aligned since correct alignment depends on the tube characteristics. Adherence to these points will assure continued accuracy of calibration and output. Proceed as follows:

Remove the instrument from its case. Make sure that the two oscillator shields are securely mounted on the chassis and that all tubes make good contact with their socket terminals. Reset the control knobs, as explained below, if necessary.

Fixed Oscillator.—Place the instrument in operation, setting the "POWER" and "INDICATOR" switches respectively to the "ON" and "USE" positions, the "OUTPUT" control to its *maximum* (clockwise) position, and the main tuning control to its 15,000-cycle position. Tune in a radio receiver accurately to 700 kc—either to a broadcast station or to an RCA Stock No. 9572 Piezo-Electric Calibrator. The latter calibrator should be connected for d-c plate operation using at least 22½ volts. With the calibrator output switch at the "LO" position, the seventh harmonic will be a 700-kc signal. Place a lead about two inches away from the grid lead of the fixed oscillator tube and connect the other end of this lead to the antenna terminal on the receiver, leaving the receiver antenna connected.

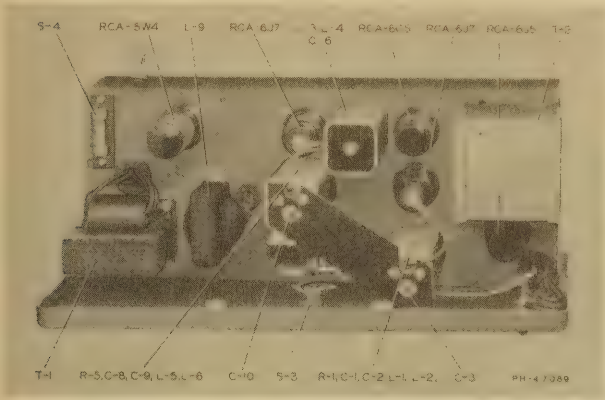


Figure 11—Top View of Chassis

These operations will feed two signals into the receiver: (1) The broadcast station carrier or the calibrator frequency, and (2) the fixed oscillator frequency from the beat-frequency oscillator. The second harmonic of the fixed oscillator will be used for indication, since its fundamental is 350 kc. Adjust trimmer C-3 of the fixed oscillator (see Figure 11 for location) until zero beat is heard in the receiver loudspeaker, indicating that the fixed oscillator is correctly tuned to 350 kc. Disconnect the lead to the receiver antenna connection.

Variable Oscillator.—After proper alignment of the fixed oscillator, as explained above, set the main tuning control to its 30-cycle position. Set the "CAL. ADJ." pointer to its vertical position and place the "INDICATOR" switch to "CAL.," leaving the "OUTPUT" control set at maximum. Adjust trimmer C-10 of the variable oscillator (see Figure 11 for location) until zero beat occurs between the two oscillators. This point will be indicated when the neon lamp goes out entirely. A pair of headphones may be connected across the 5,000-ohm output terminals to obtain the same indication of zero beat. The oscillators are now properly aligned, but the "CAL. ADJ." setting is not correct for operation and must be adjusted as described under "Calibration."

POINTER ADJUSTMENTS

The main tuning control pointer should coincide exactly with the 15,000-cycle mark when the variable capacitor is set to the position for maximum capacity. If, for any reason, this pointer does not stop at this position, remove the bakelite knob by loosening its set screw and loosen the two sets screws in the collar to which the main pointer is attached. Turn the capacitor shaft clockwise until the capacitor plates are in their full-mesh (maximum-capacity) position. Set the pointer of the main tuning control exactly on the 15,000-cycle mark and tighten the set screws, making sure that neither the shaft nor the pointer shifts as these screws are tightened; then replace the bakelite tuning knob. This setting must be exact for accurate frequency calibration.

The pointers on the "CAL. ADJ." and "OUTPUT" knobs should be in a vertical position when the controls are set midway between their stops. These knobs may be reset by loosening their set screws and resetting the knobs to their correct positions.

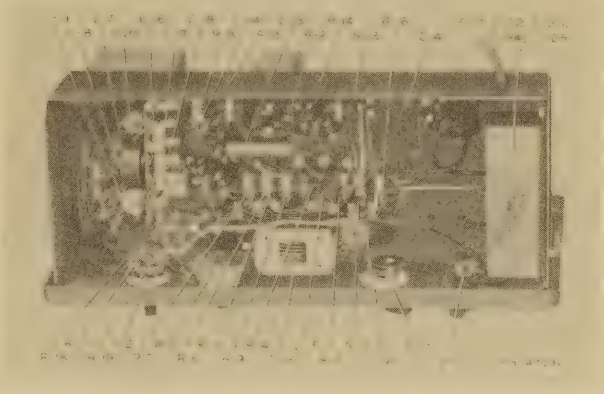


Figure 12—Bottom View of Chassis

OUTPUT CALIBRATION

Connect a 0–30 volt, a-c meter (equivalent load 5,000 ohms) across the two output terminals marked "5000." If a 1,000-ohm-per-volt meter is used, connect a carbon resistor of approximately 6,000 ohms in parallel with the meter to obtain the equivalent 5,000-ohm load. Calibrate the instrument properly, as described under "Calibration." Place the "INDICATOR" switch at "USE" and advance the "OUTPUT" control to maximum. Set the main tuning control to its 1,000-cycle position. Adjust the magnetite core (L-3) on the i-f transformer (see Figure 11 for location) for maximum output.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
12348	Capacitor—Calibration adjustment capacitor, 3-15 mmfd. (C-11)	
31330	Capacitor—Air trimmer capacitor, 5-75 mmfd. (C-3, C-10)	
31333	Capacitor—Variable tuning capacitor, 8-58 mmfd. (C-12)	
12948	Capacitor—Moulded toothpick capacitor, 33 mmfd. (C-18)	
12723	Capacitor—Moulded toothpick capacitor, 56 mmfd. (C-16)	
12813	Capacitor—Moulded toothpick capacitor, 82 mmfd. (C-17)	
12694	Capacitor—Moulded toothpick capacitor, 220 mmfd. (C-6)	
31332	Capacitor—Moulded toothpick capacitor (temperature compensated), 450 mmfd. (C-9)	
31329	Capacitor—Moulded toothpick capacitor (temperature compensated), 470 mmfd. (C-2)	
14498	Capacitor—Moulded toothpick capacitor, 680 mmfd. (C-14)	
12536	Capacitor—Moulded toothpick capacitor, 820 mmfd. (C-1, C-8)	
4886	Capacitor—Paper capacitor, 0.05 mfd. (C-4, C-13)	
14626	Capacitor—Paper capacitor, 0.07 mfd. (C-15)	
4839	Capacitor—Paper capacitor, 0.1 mfd. (C-20)	
12484	Capacitor—Paper capacitor, 0.25 mfd. (C-19, C-21)	
31331	Capacitor—Comprising one 5 mfd., 300 volts; one 5 mfd., 350 volts; one 10 mfd., 400 volts; one 12 mfd., 25 volts; and one 20 mfd., 25 volts electrolytic capacitors (C-23, C-24, C-25, C-7, C-22)	
4867	Coil—Filter choke coil (L-7, L-8)	
31343	Escutcheon—Dial escutcheon	
30926	Foot—Rubber foot	
14133	Fuse—1 amp. fuse (S-4)	
30925	Handle—Carrying handle	
7960	Knob—Bar-pointer knob	
31340	Knob—Red knob	
4161	Lamp—Neon glow lamp (S-3)	
13210	Mounting—Fuse mounting	
31341	Pointer—Pointer assembly	
31327	Potentiometer—"OUTPUT," 50,000 ohms (R-11)	
6552	Reactor—Filter reactor	
31328	Resistor—Voltage-divider resistor, comprising one 235 ohms, one 3,000 ohms, and one 20,000 ohms sections (R-13, R-14, R-15)	
14559	Resistor—10,000 ohms, ¼ watt (R-2)	
13045	Resistor—18,000 ohms, ¼ watt (R-1, R-5)	
13998	Resistor—22,000 ohms, ¼ watt (R-4)	
12412	Resistor—47,000 ohms, ¼ watt (R-8, R-9)	
12286	Resistor—56,000 ohms, ¼ watt (R-18)	
30650	Resistor—56,000 ohms, ½ watt (R-12)	
14560	Resistor—100,000 ohms, ¼ watt (R-17, R-19)	
30180	Resistor—120,000 ohms, ½ watt (R-7)	
14020	Resistor—150,000 ohms, ¼ watt (R-10)	
12199	Resistor—270,000 ohms, ¼ watt (R-16)	
31449	Resistor—1.5 meg., ½ watt (R-3)	
30649	Resistor—2.2 meg., ½ watt (R-6)	
31251	Socket—Tube socket (RCA-5W4)	
11278	Socket—Tube socket (RCA-6J7)	
11280	Socket—Tube socket (RCA-6C5, RCA-6J5)	
31342	Strip—Output terminal strip	
31334	Switch, "POWER"—S.P.S.T. switch (S-1)	
31335	Switch, "INDICATOR"—D.P.D.T. switch (S-2)	
9556	Transformer—Power transformer (T-1)	
31336	Transformer—Output transformer (T-2)	
31337	Transformer—Fixed oscillator transformer (L-1, L-2, C-1, C-2, C-3, R-1)	
31338	Transformer—I-F transformer (L-3), L-4, C-6)	
31339	Transformer—Variable oscillator (L-5, L-6, C-8, C-9, C-10, R-5)	

38-6-6

Cathode-Ray Oscillograph

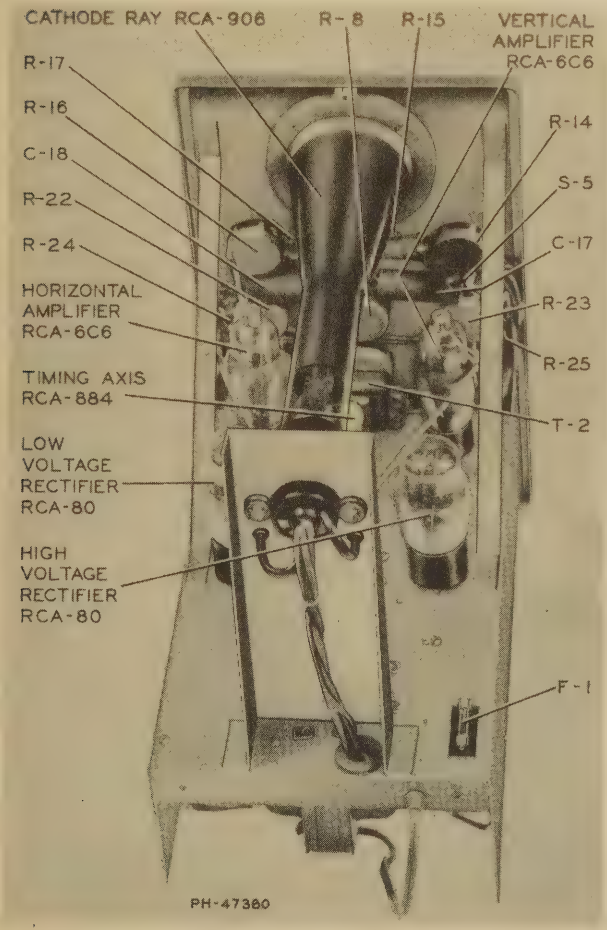
Stock No. 155

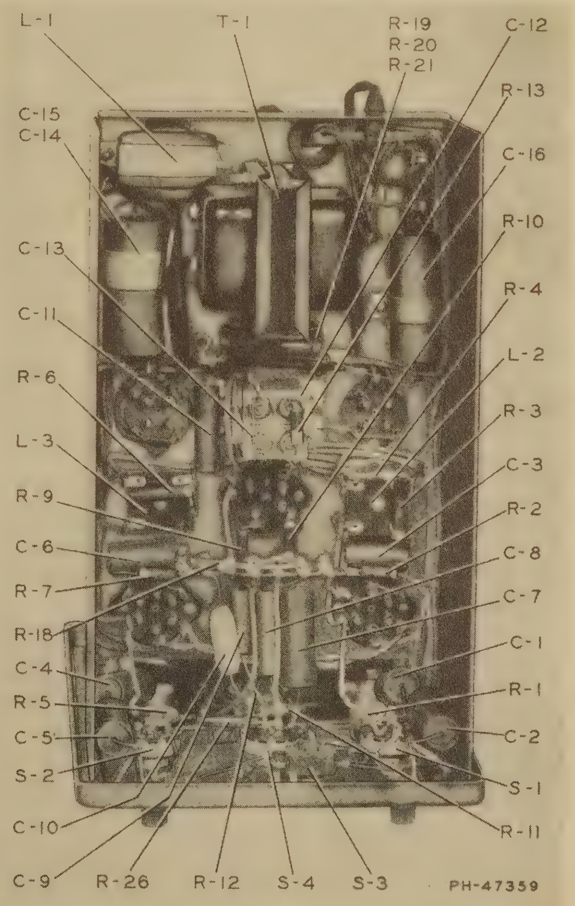
ELECTRICAL CHARACTERISTICS

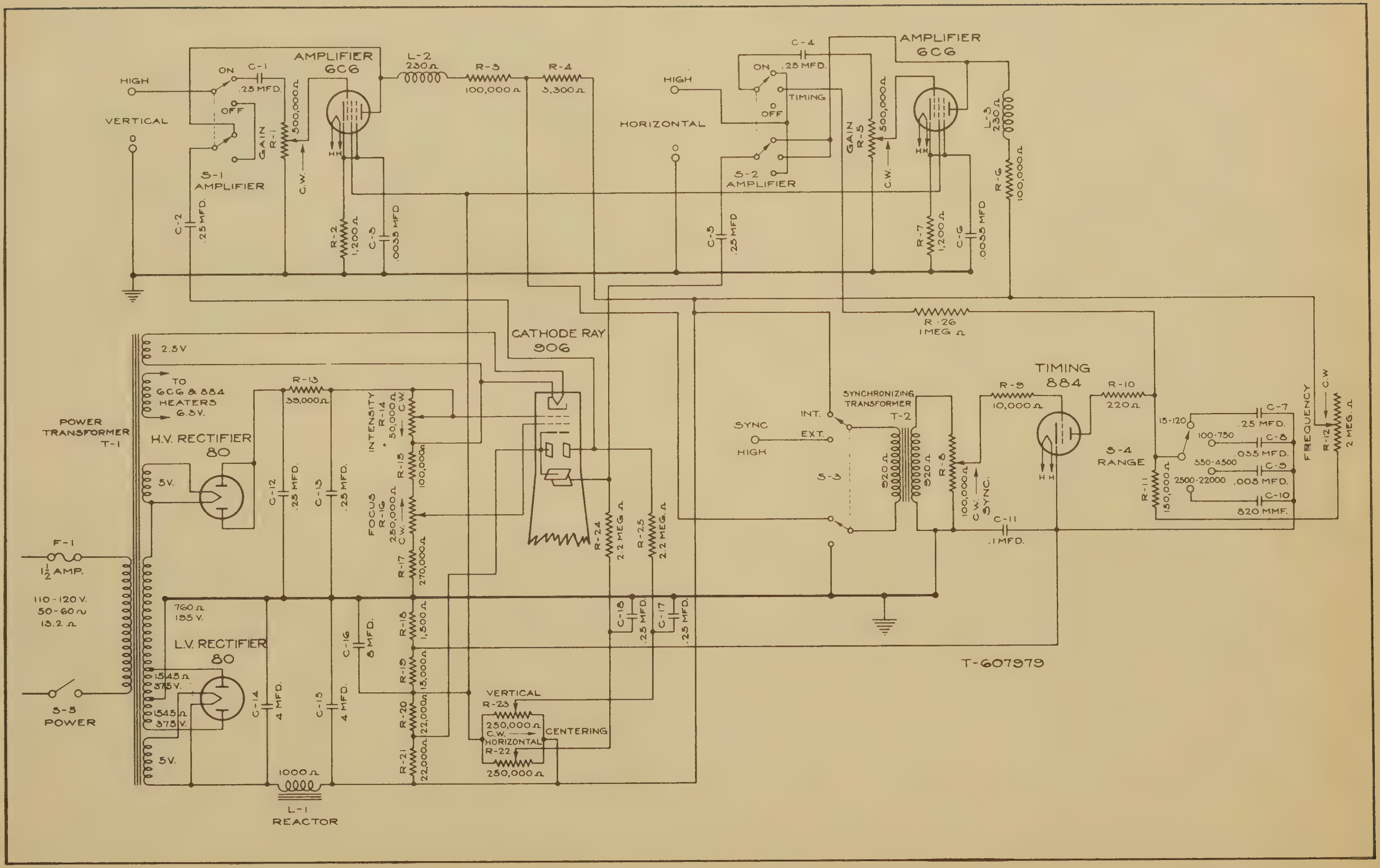
Power Supply	Rating	110–120 Volts, 50–60 Cycles
	Power Consumption	50 Watts
	Fuse Protection	1.5 Amps.
Operating Limits	Deflection sensitivity at amplifier inputs	0.5 volt per inch (max. "gain.")
	Deflection sensitivity at cathode-ray tube inputs	20 volts per inch
	Input Characteristics:	
	(1) Through either amplifier	500,000 ohms, approximately 20 mmfd.
	(2) Without either amplifier	2,200,000 ohms, approximately 40 mmfd.
	Frequency response range of amplifiers	20–90,000 Cycles
	Maximum signal input (with amplifier)	700 Volts (RMS)
	Frequency range of timing axis	15–22,000 Cycles
	Maximum d-c voltage across input binding posts	300 Volts
Radiotrons Used and Functions	2 RCA-6C6	Signal amplifiers for vertical and horizontal deflections
	1 RCA-884	"Saw-tooth" oscillator
	1 RCA-906	Cathode-ray tube (3-inch)
	2 RCA-80	High- and low-voltage rectifiers

MECHANICAL SPECIFICATIONS

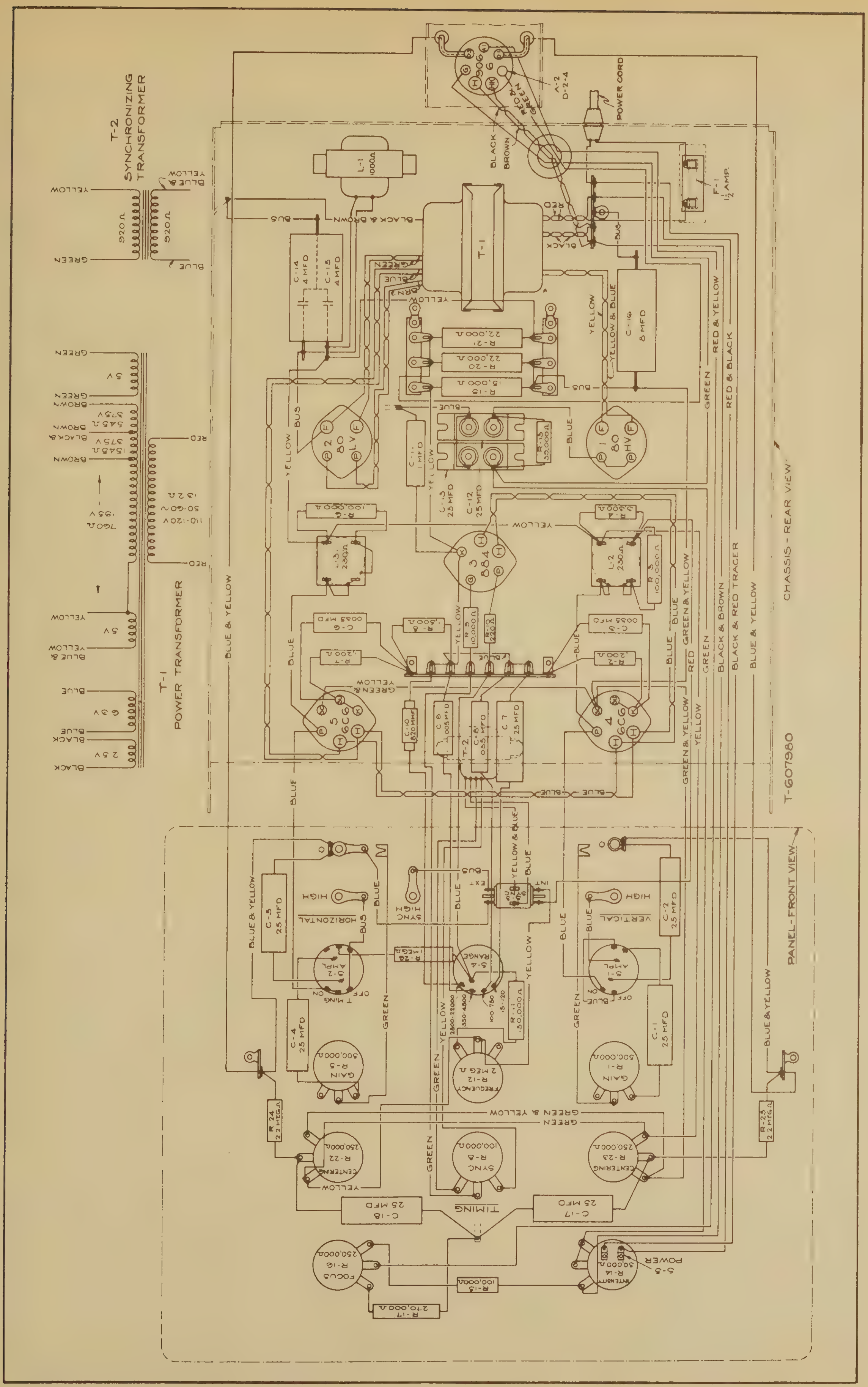
Overall Dimensions	Height (including carrying-handle)	14⅜ inches
	Width	8 inches
	Depth	14¼ inches
Weight (Net)		21 pounds


CATHODE RAY RCA-906
R-8
R-15
VERTICAL AMPLIFIER RCA-6C6
R-17
R-16
R-14
C-18
S-5
R-22
C-17
R-24
R-23
HORIZONTAL AMPLIFIER RCA-6C6
R-25
TIMING AXIS RCA-884
T-2
LOW VOLTAGE RECTIFIER RCA-80
HIGH VOLTAGE RECTIFIER RCA-80
F-1
PH-47380





Schematic Circuit Diagram, T-607979



Chassis Wiring Diagram, T-607980

Controls

1. "*Intensity*" control (R-14) is a potentiometer in the low side of the high-voltage bleeder. Its position controls the bias on the grid of the cathode-ray tube, which in turn determines the quantity of electrons emanating from the "gun," thus controlling the spot size. The power switch (S-5) is located on this potentiometer. Initial clockwise rotation of this control closes the switch and additional rotation increases the spot size.

2. "*Focus*" control (R-16) is a potentiometer in the high-voltage bleeder. Its position controls the anode No. 1 voltage, which ,with constant A-2 voltage) determines the distance at which the electron beam focuses. In general, for a given "*Intensity*" setting, the "*Focus*" control should be set for maximum distinctness of spot or image.

3. "*Vertical Amplifier*" switch (S-1) connects the "*Vertical*" binding posts either straight through to the vertical deflecting plates on the cathode-ray tube or through an amplifier to these deflecting plates. In either case, there is a condenser in the input circuit.

4. "*Horizontal Amplifier*" switch (S-2) has three positions: "*Timing*," "*On*," and "*Off*." On "*Timing*," the "saw-tooth" or timing-axis oscillator feeds through an amplifier to the horizontal deflecting plates on the cathode-ray tube. At "*On*," the "*Horizontal*" binding posts are connected through an amplifier to these deflecting plates while at "*Off*," the binding posts are connected straight through to the deflecting plates. In either of the latter two cases, there is a condenser in the input circuit.

5. "*Vertical Gain*" control (R-1) is a potentiometer on the input circuit of the vertical amplifier. With "*Vertical Amplifier*" switch at "*On*," this potentiometer controls the vertical deflection.

6. "*Horizontal Gain*" control (R-5) is a potentiometer on the input circuit of the horizontal amplifier. With the "*Horizontal Amplifier*" switch at "*Timing*" or "*On*," this potentiometer controls the horizontal deflection. Due to the capacity load on this input potentiometer, when operating on "*Timing*" at the higher audio frequencies, linear sweep will not be obtained at all settings of this control. For best results, the control should be set for maximum linearity.

7. "*Range*" switch (S-4) selects one of four timing capacitor values. It thus changes the timing-axis oscillator frequency in steps, giving four ranges approximately as shown on the front panel.

8. "*Freq.*" control (R-12) is a rheostat in series with the timing condenser. It changes the timing-axis oscillator frequency gradually as it is rotated, and in conjunction with "*Range*" switch above gives continuous range between the extremes of frequency.

9. "*Sync.*" control (R-8) is a potentiometer controlling the amount of synchronizing voltage fed to the grid of the RCA-884 tube. In general, it should be set as far counterclockwise as is consistent with a locked image, since over-synchronization causes poor wave-form from the timing-axis oscillator.

10. "*Sync.*" switch (S-3) has two positions, "*Int.*" and "*Ext.*" At "*Int.*," the voltage drop across resistor R-4 in the plate circuit of the vertical amplifier is fed through the "*Sync.*" control and input transformer to the grid of the RCA-884 tube. Thus, the timing-axis oscillator can be synchronized with the signal on the vertical axis at the fundamental frequency or at any small submultiple, such as ½, ⅓. . . .Synchronization is not effective if it is attempted to operate the timing-axis oscillator at a higher frequency than that of the synchronizing voltage. On "*Ext.*," the "*Sync.*" binding post is connected to the "*Sync.*" control. This allows the use of an external source for synchronizing.

11. The two "centering" controls on the front panel control the amount of d-c potential between the two deflecting plates of each pair, and thereby allow adjustment of the position of the spot or image. There is sufficient voltage across these controls to allow moving the spot completely off-screen. Start with both of these controls at about mid-position.

12. There are five binding posts on the unit. Voltage impressed on the "*Vertical*" posts will give deflection vertically whereas voltage impressed on the "*Horizontal*" posts will give deflection horizontally. The "*Sync.*" post is used when it is desired to synchronize the timing-axis oscillator with some external source. (See 9 above.) The binding posts marked "O" are common ground and the ones marked "HIGH" are insulated from ground. which is the chassis.

WARNING—A POTENTIAL OF 1000 VOLTS IS PRESENT AT THE CATHODE-RAY TUBE SOCKET AND AT OTHER POINTS ON THE CHASSIS. ALWAYS DISCONNECT THE POWER CORD BEFORE REMOVING THE CHASSIS FROM THE CABINET.

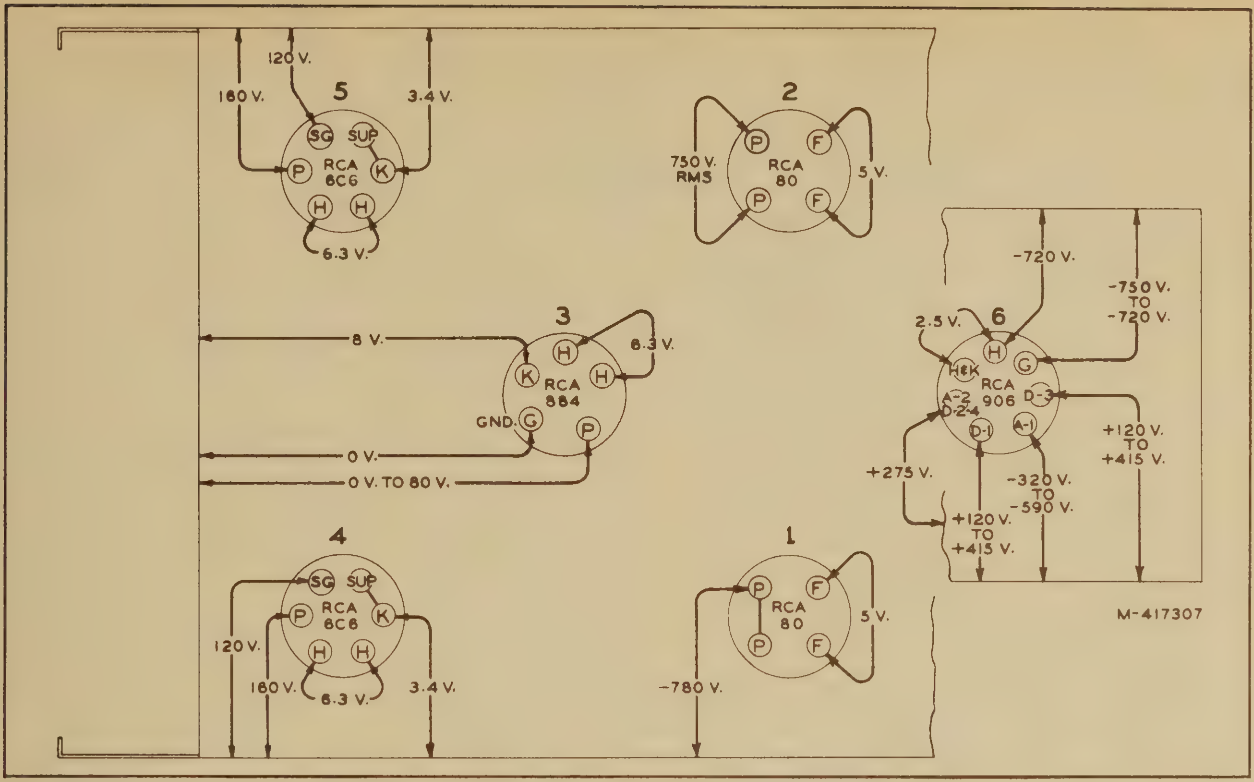


Figure 36—Radiotron Socket Voltage Diagram

RADIOTRON SOCKET VOLTAGE TABLE

115-Volt, 60-Cycle Supply Line

RADIOTRON			Cathode Volts to Ground DC.	Screen Grid Volts To Ground DC.	Plate Volts to Ground DC.	Cathode Current MA-DC.	Anode Volts to Ground DC.		Deflecting Plates to Ground DC.		Filament or Heater Volts AC.
Socket Number	Type	Function					No. 1	No. 2	D_1	D_2	
1	RCA-906	Cathode Ray	—720*	—	—	—	—320 to —590*	+275	+120 to +415	+120 to +415	2.5
2	RCA-80	Low Voltage Rectifier	—	—	375 (RMS)	8	—	—	—	—	5.0
3	RCA-80	High Voltage Rectifier	—	—	+780*	—	—	—	—	—	5.0
4	RCA-6C6	20–90,000 Cycle Amp.	+3.4	+120	+160	3	—	—	—	—	6.3
5	RCA-6C6	20–90,000 Cycle Amp.	+3.4	+120	+160	3	—	—	—	—	6.3
6	RCA-884	15—22,000 Cycle Osc.	+8.0	—	0 to +80*	0.16 to 2.0	—	—	—	—	6.3

* Cannot be correctly measured with ordinary voltmeter.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

Stock No.	Description	
12536	Capacitor—Moulded toothpick capacitor, 820 mmfd (C-10)	
30303	Capacitor—Paper capacitor, 0.0035 mfd (C-3, C-6)	
4838	Capacitor—Paper capacitor, 0.005 mfd (C-9)	
5196	Capacitor—Paper capacitor, 0.035 mfd (C-8)	
4839	Capacitor—Paper capacitor, 0.1 mfd (C-11)	
12484	Capacitor—Paper capacitor, 0.25 mfd (C-1, C-2, C-4, C-5, C-7, C-17, C-18)	
15943	Capacitor—Oil-filled paper capacitor, 0.25 mfd (C-12, C-13)	
14120	Capacitor—Electrolytic capacitor, 4/4 mfd (C-14, C-15)	
13610	Capacitor—Electrolytic capacitor, 8 mfd (C-16)	
4867	Coil—Plate choke coil (L-2, L-3)	
31910	Cushion—Sponge rubber front cushion for RCA-906	
31911	Escutcheon—Control panel escutcheon	
2725	Fuse—Cartridge type fuse, 1½ amperes (F-1)	
7960	Knob—Bar pointer knob	
13210	Mounting—Fuse mounting	
4857	Post—Binding post, "HIGH"	
4607	Post—Binding post, "O"	
31897	Potentiometer—"INTENSITY," 50,000 ohms (R-14)	
31894	Potentiometer—"SYNC.," 100,000 ohms (R-8)	
31898	Potentiometer—"FOCUS" (R-16) and "CENTERING" (R-22, R-23), 250,000 ohms	
31893	Potentiometer—"GAIN," 500,000 ohms (R-1, R-5)	
31896	Potentiometer—"FREQUENCY," 2 megohms (R-12)	
13111	Reactor—Filter reactor (L-1)	
14561	Resistor—Carbon resistor, 220 ohms, ¼ watt (R-10)	
30731	Resistor—Carbon resistor, 1,200 ohms, ½ watt (R-2, R-7)	
30654	Resistor—Carbon resistor, 1,500 ohms, ½ watt (R-18)	
30733	Resistor—Carbon resistor, 3,300 ohms, ½ watt (R-4)	
3078	Resistor—Carbon resistor, 10,000 ohms, ½ watt (R-9)	
14166	Resistor—Carbon resistor, 15,000 ohms, 2 watts (R-19)	
13669	Resistor—Carbon resistor, 22,000 ohms, 2 watts (R-20, R-21)	
30147	Resistor—Carbon resistor, 39,000 ohms, ½ watt (R-13)	
3252	Resistor—Carbon resistor, 100,000 ohms, ½ watt (R-15)	
3058	Resistor—Carbon resistor, 100,000 ohms, 1 watt (R-3, R-6)	
31895	Resistor—Carbon resistor, 150,000 ohms, 1 watt (R-11)	
31899	Resistor—Carbon resistor, 270,000 ohms, 1 watt (R-17)	
2546	Resistor—Carbon resistor, 1 megohm, 1 watt (R-26)	
30649	Resistor—Carbon resistor, 2.2 megohms, ½ watt (R-24, R-25)	
9739	Screen—Cathode-ray tube screen	
30927	Spring—Panel mounting spring	
4794	Socket—Tube socket, 4-contact (for RCA-80)	
4814	Socket—Tube socket, 5-contact (for RCA-884)	
4786	Socket—Tube socket, 6-contact (for RCA-6C6)	
31908	Socket—Tube socket, 7-contact (for RCA-906)	
11851	Switch—D.P.D.T. toggle switch, "SYNCH." (S-3)	
31902	Switch—2-pole, 2-position switch, "VERT. AMPL." (S-1)	
31903	Switch—2-pole, 3-position switch, "HORIZ. AMPL." (S-2)	
31904	Switch—1-pole, 4-position switch, "RANGE" (S-4)	
31906	Transformer—Power transformer, XT-2792 (T-1)	
14119	Transformer—Synchronizing transformer (T-2)	

38-25-7

RADIO TUBE TESTER

Stock No. 156: Portable Type
Stock No. 156-A: Counter Type

SPECIFICATIONS

Power Supply Requirements:	
Line Rating	100-125 volts, 50/60 cycles
Power Consumption	25 watts
Tube Complement:	
Rectifier	1 RCA-6J5-G
Mechanical Specifications:	
Dimensions	13½″ long, 8″ wide, 5¾″ high
Weight (net)	14 pounds
Finish	Blue-gray wrinkle lacquer with light metal trim

DESCRIPTION

This radio tube tester is a highly-efficient and sturdy instrument featuring unusual simplicity of operation. By using a new interlocking design, the push buttons are retained or released automatically as required for testing purposes. An easy-reading roll chart affords ready reference to the active buttons and control settings for each type of tube. Connecting guide lines are marked on the panel from the controls to the corresponding columns of the chart. To insure greater precision, the line voltage is indicated continuously for adjustment except during actual measurement.

APPLICATION

Practically every standard type of receiving tube as well as special types including the regulator, ballast, tuning indicator (Magic Eye) and certain cathode-ray oscillograph tubes can be tested for acceptibility with this instrument. The standard RMA emission test is applied to all receiving and similar tubes whereas the regulator tubes, which are gaseous in type, are tested for breakdown voltage. Ballast tubes may be checked for open circuit, and "noisy" welds can be detected readily by means of a pair of phones. In tuning indicators, the visible control range (opening and closing of the "eye") may be noted in addition to emission.

Although the emission of a tube normally is an excellent criterion of performance, sometimes it is not the definite limiting factor. Thus, a tube which tests "poor" may, in rare instances, be perfectly satisfactory for a given application, or the reverse may equally well be true. A knowledge of the operating conditions, therefore, is highly desirable.

INSTALLATION

Upon unpacking this instrument, remove the panel assembly from the case. The panel assembly may be disengaged readily by prying with a screwdriver or similar tool inserted through the two slots at the front and the two holes at the rear after withdrawing the screw located near the center of the back. Remove the cardboard cover from the rectifier tube and make certain that the tube is properly seated and undamaged. Also, inspect the internal connections of the tester in a general manner.

Replace the instrument case and connect the power cord to an electrical outlet supplying 100 to 125 volts at 50 or 60 cycles. Throw the "POWER" switch to the "ON" position and observe the meter deflection which, after a short interval (approx. 15 seconds), will be indicative of the line voltage. Adjust this voltage by means of the "LINE VOLTS" control until the meter reads at the "LINE CHECK" (mid-scale) position.

OPERATION

As noted under "Application," the test procedure will vary with different groups of tubes. Such groups are described separately in the following sections.

RECEIVING TUBES

This group of tubes is by far the largest and embraces the a-c and battery types of detectors and amplifiers, and the various full- and half-wave rectifiers.

1. Rotate the chart to the type number of the tube to be tested and set the "FIL. VOLTS," the "CLASS" and the "TYPE" controls as indicated by the notations in the respective columns of the chart. Follow the guide lines from the chart to the control knobs to insure proper settings.

2. Insert the tube in the proper socket of the tester and attach the grid connector if the tube is equipped with a top contact.

3. Test initially for short-circuited elements by depressing the "SHORTS" button, which will lock in, and then pressing in consecutive order the buttons numbered "1" to "8." If the neon lamp glows steadily, a short-circuit is indicated and the tube should be discarded.

> NOTE.—On some tubes, the neon lamp *should* glow when certain buttons are pressed as indicated by the word "SHORTS" printed on the chart opposite such buttons.

4. Assuming that the tube is not short-circuited, proceed to the emission test by depressing the "TEST" button which will lock in and release all other buttons. Now, press the numbered buttons opposite the corresponding numbers found on the chart. Check the line voltage and readjust the "LINE VOLTS" control if necessary. Finally, depress the "OUTPUT" button and observe the condition of the tube on the "GOOD-POOR" scale of the meter. In the case of diodes, any tube which does not cause the pointer to rise to the "DIODES O. K." mark should be rejected.

> NOTE.—More than one test may be required to determine completely the condition of a tube. For instance, the Type-1A6 will require two tests, one each for the oscillator and converter sections. Similarly, three tests will be employed for the Type-1B5, one for the triode section and one for each diode section. Such multiple tests are given in order on the chart where involved.

5. A test for noise may be made if desired by plugging a pair of phones in the jack located at the lower right-hand corner of the panel and listening for "crackle" while tapping the tube. The "TEST" button should be left depressed during this test.

6. If any doubt still exists as to the tube condition, it will be advisable to repeat the short-circuit test. Excessive leakage may become evident after the tube has been heated over a longer period although the initial test usually will reveal such a defect.

TUNING INDICATOR (MAGIC EYE) TUBES

Certain tubes of this type contain an amplifier section which should be tested for short-circuits and emission in the same manner as for receiving tubes.

To check the indicator section, set the "CLASS" control on position "H," thus reducing the applied potential to 110 volts. This reduced potential is desirable since such tubes often are used under analagous conditions in a-c/d-c receivers. Depress the "TEST" button and the numbered buttons indicated on the chart which will cause the "eye" to appear

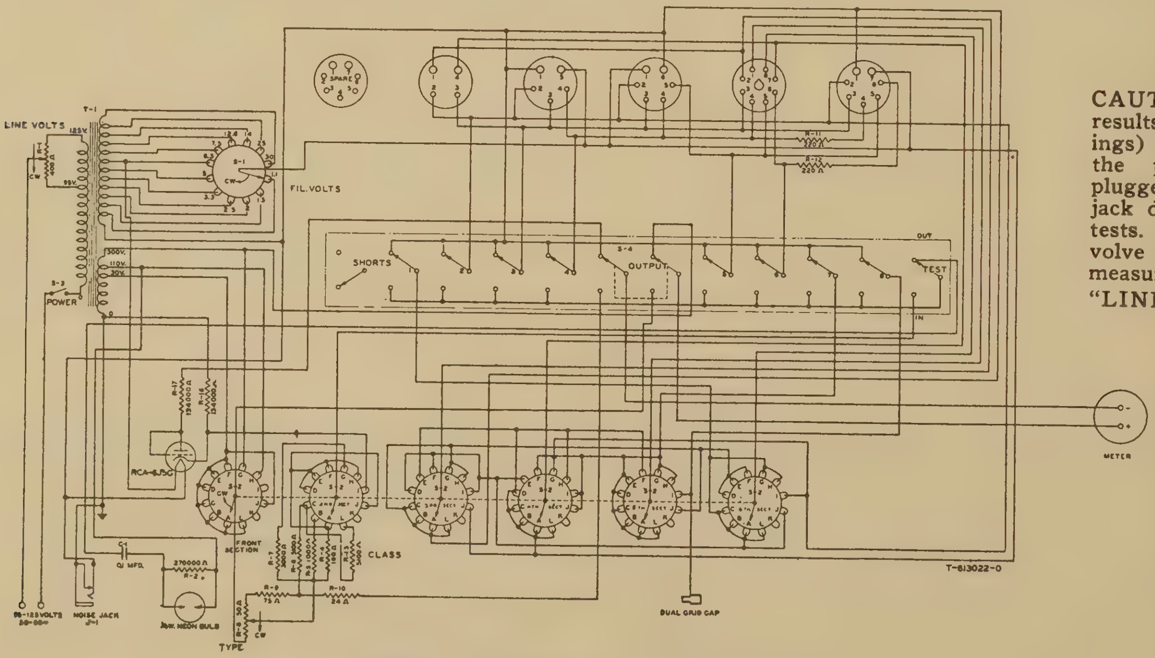


Figure 3—Schematic Circuit Diagram

CAUTION — Incor
results (low meter re
ings) will be obtaine
the phones are
plugged into the no
jack during emiss
tests. The error will
volve only the out
measurement — not
"LINE CHECK."

IB-2642

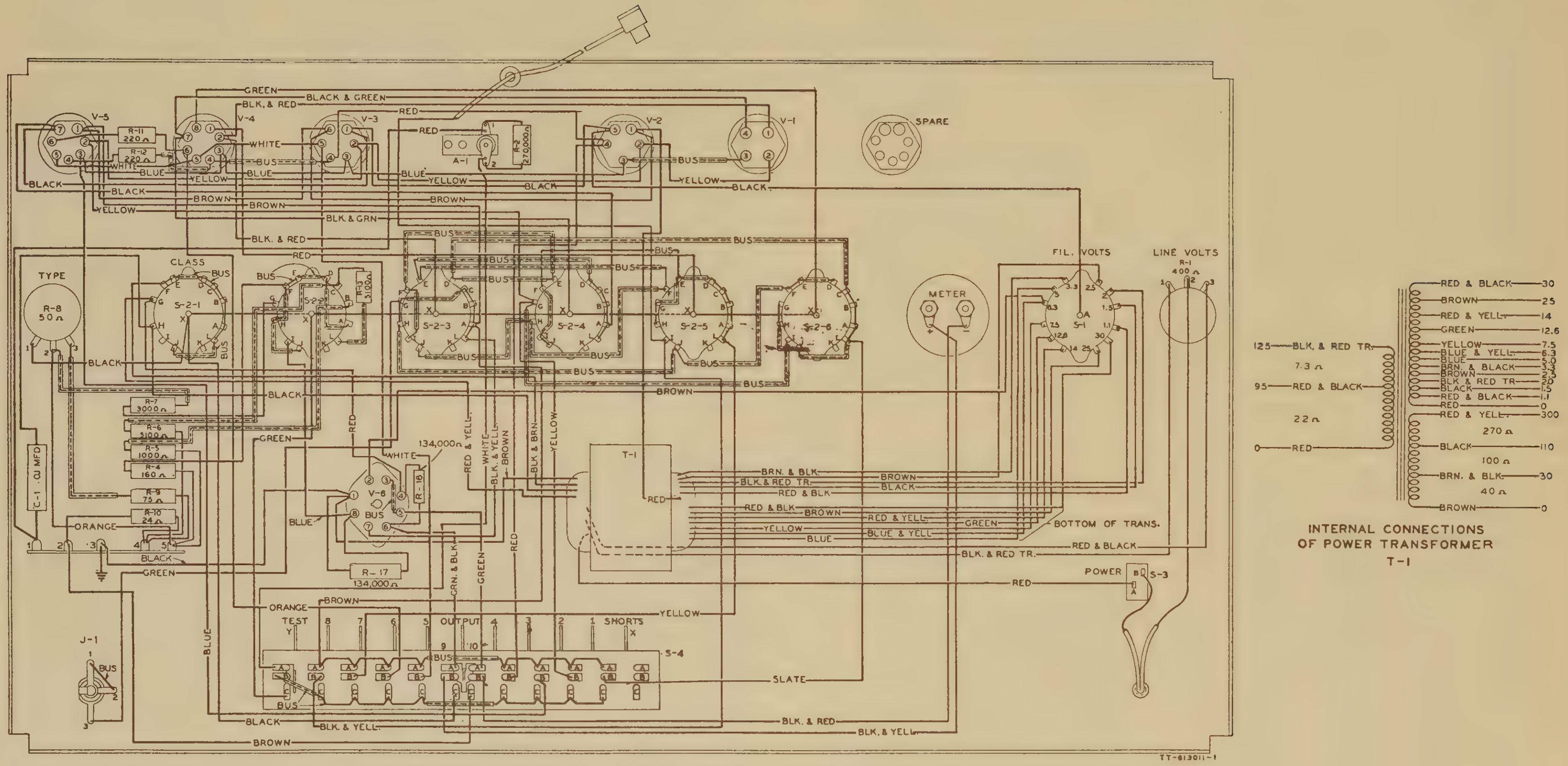


Figure 4—Connection Diagram

lighted. The "eye" should operate upon following the instructions printed on the chart directly above the "OUTPUT" button, the latter not being used for this test.

CATHODE-RAY OSCILLOGRAPH TUBES

As shown on the chart, the Types-902 and -913 cathode-ray tubes can be checked with this tester. Its use in testing other tubes of this variety is not recommended.

In testing the Type-902 or the Type-913 tube, allow at least two minutes preheat before checking the emission. The testing procedure is the same as for receiving tubes, rejecting those on which the emission is not sufficient to cause the pointer to rise to the "DIODES O. K." mark.

GASEOUS REGULATOR TUBES

These tubes should be tested initially for short-circuit and then for breakdown voltage.

For the short-circuit test, the procedure is the same as for receiving tubes. Due to the gaseous nature of these tubes, the neon lamp may glow faintly upon pressing button 1 or 3 in testing the Type-874, or upon pressing button 1 or 5 in testing the others. The tube, however, should not be rejected unless the glow is brilliant.

To test for breakdown voltage, depress the "TEST" button and then the numbered button indicated upon the chart. If the tube is good, the meter deflection will rise appreciably, whereas little or no rise will occur if the tube is poor. The "OUTPUT" button is not employed in this test.

BALLAST TUBES

Tubes of this type should be tested initially for open circuit and then for incipient noise due to poor welds. Both tests are performed with the "CLASS" control on position "I" and the "SHORTS" button depressed.

In testing for open circuits, press the numbered buttons indicated upon the chart which in each case should cause the neon lamp to glow. Failure to observe this glow is evidence of a defective tube.

The test for incipient noise is effected by listening for "crackle" through a pair of phones plugged into the jack located in the front right-hand corner of the panel. Defects of this nature usually are the result of poor welds and the noise will be exaggerated by tapping lightly upon the tube envelope.

Common type numbers of these tubes are listed in the left-hand column of the chart in numerical order, while the corresponding Clarostat (tentative RMA) type numbers are given in the right-hand column.

CIRCUITS

The circuits used in this instrument are shown on the schematic diagram of Figure 3. As may be observed from this diagram, the design is comparatively simple, consisting fundamentally of the circuit elements described by RMA for standard emission tests.

Adjustment for different plate loads and voltages as required is provided by the "CLASS" control. This control also shifts the filament connections for the octal-base tubes and is equipped with an extra set of switch contacts to avoid obsolescence of the tester in the event of forthcoming new tube types. The "TYPE" control is simply a meter shunt or calibrating potentiometer, while the remaining knobs and buttons are self-explanatory in function.

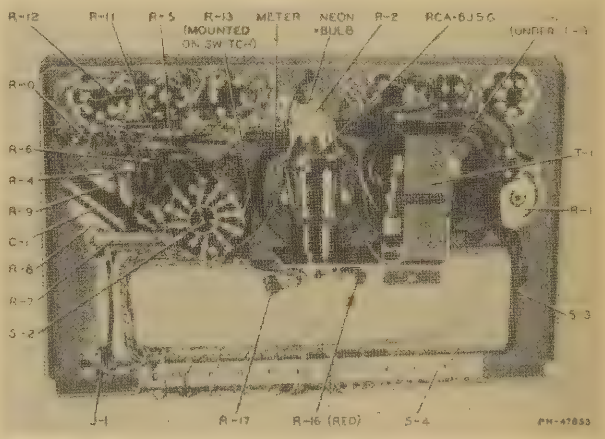


Figure 5—Bottom View of Panel

MAINTENANCE

CAUTION—DISCONNECT THE POWER SUPPLY BY WITHDRAWING THE POWER CORD PLUG BEFORE REMOVING THE INSTRUMENT CASE TO MAKE SERVICE ADJUSTMENTS.

Instructions for removal of the instrument case are given under the section entitled "Installation."

RESISTANCE AND CONTINUITY TESTS

The instrument connection diagram, Figure 4, shows the wiring color codes and the physical relations of the various parts. All resistance and capacitance values are given in addition to the identification symbols for ease of reference to the schematic diagram, photographs, and replacement parts list. The transformer windings are rated in terms of their d-c resistances.

VOLTAGE MEASUREMENTS

The normal operating voltages of the equipment are represented diagramatically in Figure 6. These values should be observed within ±10% when measured with the line voltage adjusted so that the meter reads at the "LINE CHECK" (mid-scale) position. A voltmeter of high internal resistance (at least 1,000 ohms per volt) should be employed. All voltages are a.c. (r-m-s) except in the one instance noted as "d.c."

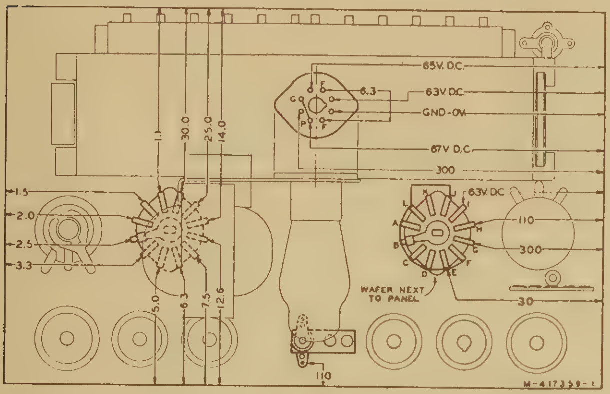


Figure 6—Voltage Diagram

CHART REPLACEMENT

In the event that replacement of the roll chart is required, proceed as follows:

1. Remove the instrument case (see "Installation").
2. Pull off the push buttons, then loosen the switch by taking out the two mounting screws, and swing it clear of the chart.
3. Rotate the chart to the *finish* end and remove the wood screw securing this end to the front spool.
4. Pull out the chart and detach the other end from the rear spool in the same manner.

To insert the new chart:

1. Pass the *start* end of the chart between the front spool and the panel, and attach that end to the rear spool using one of the two wood screws formerly removed.
2. Rotate the thumb-wheel until the entire length of the chart is snugly wound on the rear spool.
3. Attach the *finish* end of the chart to the front spool, leaving about four inches of slack.

Should any binding occur in operation, rewind the chart on the rear spool, remove the *finish* end from the front spool and reattach it allowing more slack.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	
32118	Bolt—Suitcase bolt	
32120	Button—Push-button (black)	
32121	Button—Push-button (red)	
32117	Cap—Dual contact cap	
4839	Capacitor—0.1 mfd. (C-1)	
32180	Chart—Roll chart (tube data)	
30925	Handle—Carrying handle	
7903	Jack—Phone jack (J-1)	
32116	Knob—Control knob	
23153	Lamp—Neon glow lamp	
32079	Meter	
32133	Panel—Control panel	
32130	Potentiometer—50 ohms (R-8)	
32131	Potentiometer—400 ohms (R-1)	
32182	Resistor—24 ohms, ¼ watt (R-10)	
32181	Resistor—75 ohms, ¼ watt (R-9)	
32179	Resistor—160 ohms, 1 watt (R-4)	
5201	Resistor—220 ohms, ½ watt (R-11, R-12)	
30152	Resistor—1,000 ohms, 1 watt (R-5)	
32122	Resistor—3,000 ohms, 10 watts (R-7)	
3413	Resistor—5,100 ohms, ½ watt (R-6, R-13)	
32549	Resistor—Matched pair of 134,000-ohm, ½-watt resistors (R-16 R-17). Sum = 268,000 ohms ±2%	
30651	Resistor—270,000 ohms, ½ watt (R-2)	
31251	Socket—Tube socket (octal, for rectifier)	
32129	Socket—Tube socket (octal)	
32125	Socket—Tube socket (4-prong)	
32126	Socket—Tube socket (5-prong)	
32127	Socket—Tube socket (6-prong)	
32128	Socket—Tube socket (7-prong)	
32115	Socket—Neon lamp socket	
32132	Spring—Spring for panel contact	
32124	Switch—1-gang, 1-pole, 12-position (S-1)	
32123	Switch—6-gang, 6-pole, 12-position (S-2)	
32119	Switch—Single-pole, single-throw (S-3)	
32080	Switch—Push-button switch (S-4)	
32183	Transformer — Power transformer XT-2970 (T-1)	

SERVICE DATA

FOR

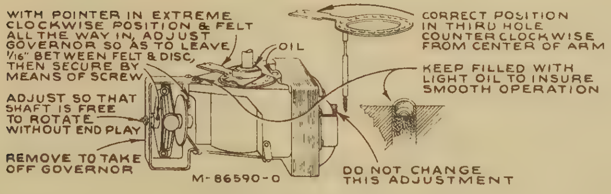
RCA AUTOMATIC RECORD CHANGERS

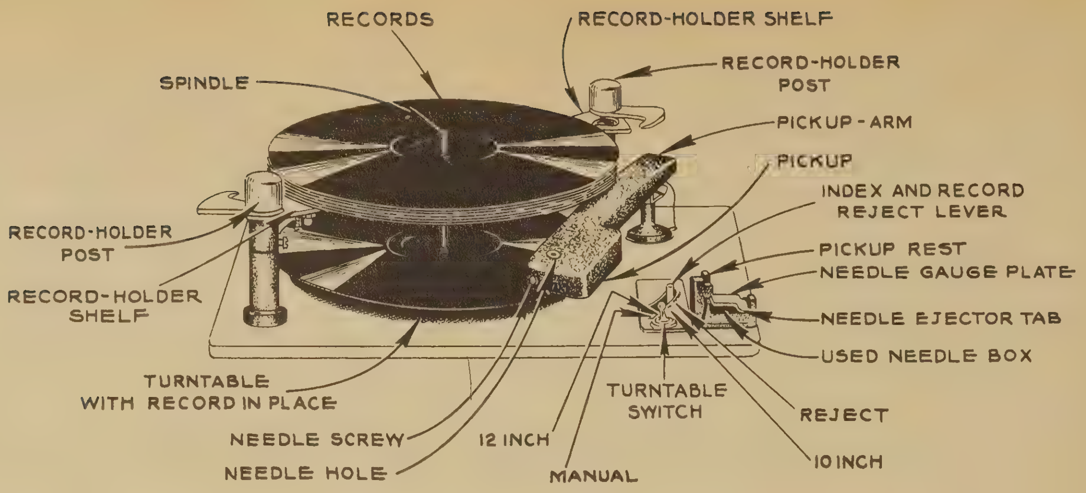
USED IN

VICTROLA MODELS U-125, U-128, U-130, U-132, U-134, and

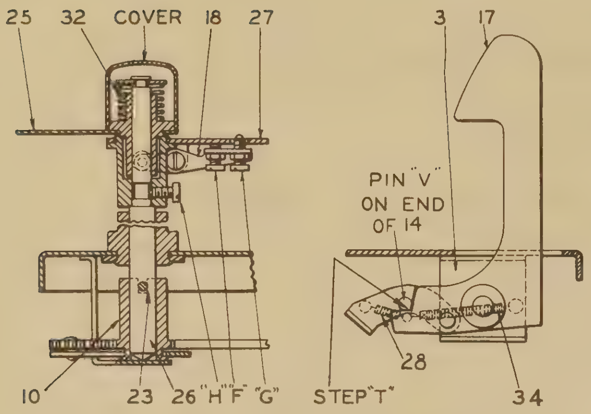
RECORD CHANGERS, Stock No. 9844, and 9844A

This information also applies to Victrola Models 11QU and 12QU, except that these two models have a lever-type speed control, as shown below:

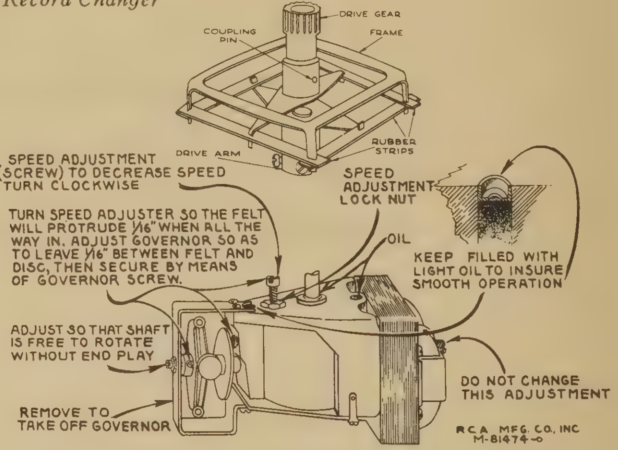

WITH POINTER IN EXTREME CLOCKWISE POSITION & FELT ALL THE WAY IN, ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT & DISC, THEN SECURE BY MEANS OF SCREW
OIL
CORRECT POSITION IN THIRD HOLE COUNTERCLOCKWISE FROM CENTER OF ARM
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
REMOVE TO TAKE OFF GOVERNOR
M-86590-0
DO NOT CHANGE THIS ADJUSTMENT



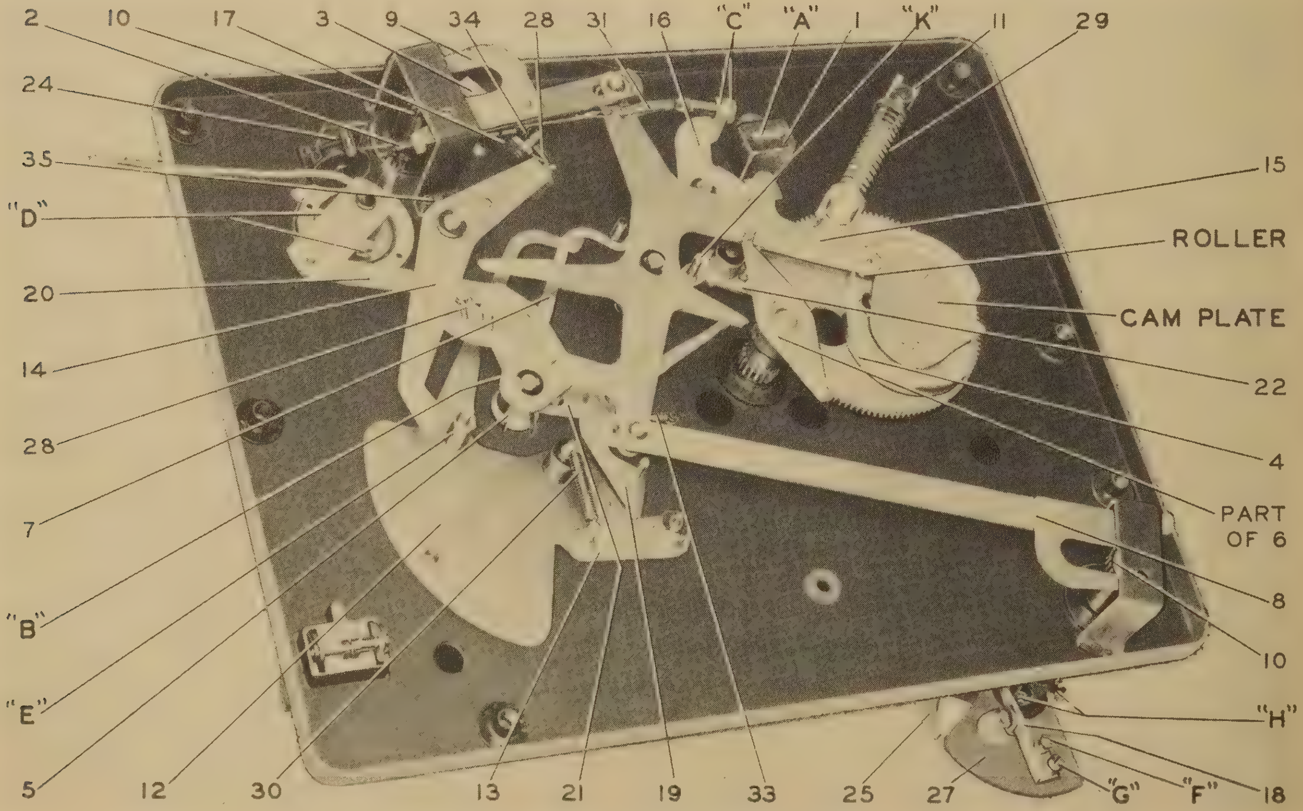
Top View of Automatic Record Changer



Details of Record Shelf Posts, and Locating Lever Assemblies


DRIVE GEAR
COUPLING PIN
FRAME
RUBBER STRIPS
DRIVE ARM
SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
R.C.A. MFG. CO. INC
M-81474-0

Motor Data and Coupling



Bottom View of Automatic Record Changer

NOTE: Numbers refer to parts—letters refer to adjustments.

Automatic Record Changer

GENERAL INFORMATION

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

The turntable, spindle, and pinion gear are assembled by means of a 3/32 inch straight pin. This pin may be removed by gently driving with a standard pin punch.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

A shorting switch, located in the pickup head, operates due to pressure when the pickup is placed on the pickup rest.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record. — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife. — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustments be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H".

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

The felt washer between the turntable and spindle bearing should be soaked in light engine oil whenever the turntable is removed, or as required for proper operation.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or flexible coupling of drive motor.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual mis-adjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E".
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C".
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; flexible coupling between motor and changer mechanism not correctly assembled; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34".

INSTRUCTIONS
FOR
INSTALLATION AND OPERATION
RCA AUTOMATIC RECORD CHANGERS
Stock Nos. 9844 and 9844A

This Record Changer will automatically play a series of eight 10- or seven 12-inch records of the 78 revolutions-per-minute type or, if you so desire, you may change records, of any size up to 12 inches, manually. Records of the last few years with the standard eccentric or spiral stopping groove will operate the automatic mechanism and change your records for you. Stock No. 9844 is for operation on 110 volts 60 cycles only, and Stock No. 9844-A is for operation on 110 volts 50-60 cycles.

INSTALLATION

The Automatic Record Changer as supplied consists of two units.

1. **The Motorboard Unit** which includes the automatic record changer mechanism, the turntable, and the pickup.

2. **The Motor Unit** which includes the support plate assembly.

The units are supplied ready for mounting on a cabinet rail. This rail must be drilled in accordance with the information and dimensions shown on page 4. Wooden support blocks as shown, must be provided by the customer. All other necessary parts are included in your purchase. It is essential for proper operation that the rail and support blocks provide for the mounting of the motor support plate exactly 2¾ inches below the top surface of the motorboard. The support blocks should be attached to the rail with heavy wood screws. Details of this mounting, with all necessary dimensions, are given on page 4.

To install the RCA Automatic Record Changer:

1. Install the Motor Unit with support plate loosely in position as shown on page 4. Do not tighten the mounting screws.
2. Loosen the two set screws in the collar of the flexible coupling on the Motorboard Unit, a detail of which is shown on page 3.
3. Place the Motorboard Unit in position on the cabinet rail with the upper mounting springs in place as shown on page 4. Make sure that the guide pins extending from the motor support plate enter the rubber grommets in the Motorboard Unit without binding.
4. Secure Motorboard in position using the screws and lower mounting springs as shown on page 4. Tighten up the four motorboard mounting screws to compress all eight mounting springs to the dimensions shown. *Make sure that the Motorboard Assembly is level in the cabinet.*
5. Tighten up the mounting screws on the Motor Unit support plate assembly so that they are firmly down against the spacers.
6. Check the installation to be sure that there is no binding between the collar of the flexible coupling and the collar of the motor spindle.
7. Tighten the two set screws of the flexible coupling down on the spindle of the Motor Unit.

Needle Box

The needle box is in a separate package. Place the box in the hole in the motorboard with the needle ejector tab toward the front. To do this tilt the box upwards at front and lower into hole with the lug on back of box in the slot in the motorboard. Slide the lug under the motorboard and the box drops in place.

Speed Regulation and Lubrication

There are three holes in the top of the turntable which give access to oil holes and a speed regulating screw in the motor mechanism beneath. Revolve the turntable slowly until you can see the holes and screw through the turntable. A few drops of good quality light machine oil should be applied in the oil holes at regular intervals, about once every six months.

Speed Regulation.—After the phonograph is in operation the speed should be checked while playing a record.

1. Place a piece of white paper under edge of record so that it is plainly visible.

2. Count the number of revolutions per minute with the aid of a watch.

3. If not 78, stop the turntable, lift off the record and set the turntable to give access to the speed regulator screw through one of the holes.

4. Insert a screwdriver through the hole in the turntable into the groove in the speed regulator screw and turn to right (clockwise) to decrease speed, or to the left (counterclockwise) to increase speed.

5. Replace and replay record, recount and adjust until speed is checked at 78 r. p. m.

Shipping

Shipping blocks as shown on page 4 should be used in all cases of reshipment.

OPERATION

Before operating the phonograph, either automatically or manually, be sure that the pickup is down and can be moved by hand. If not, a "cycle" must be completed to bring it down. To do this, throw Turntable Switch "on." The turntable will start to revolve and the cycle of motion on the pickup arm will be resumed. When the pickup arm comes down, turn off the Turntable Switch.

Cautions

1. Never use force to start or stop the motor or any part of the record-changing mechanism or pickup arm.

2. The use of records which have become warped or damaged through improper care may cause the mechanism to jam and damage the instrument. In addition, records which have become warped will slide on one another when playing, resulting in unsatisfactory reproduction.

3. This instrument is not recommended for playing 10-inch and 12-inch records in mixed sequence. If the user desires this service he must be positive that all records are perfectly flat and free from warp. The Index and Record Reject Lever must be set at "10" and after playing the last selection the pickup will come down in position for a 10-inch record and repeat the playing of the record on a 10-inch diameter unless the Turntable Switch is turned off. Any jamming of the mechanism under these conditions indicates that the records used are not perfectly flat or that their edges are not sufficiently smooth to permit normal operation of the separators in dropping each record in sequence onto the turntable.

4. Do not leave records on the record holder posts, as they are liable to warp, particularly so in warmer climates. Keep your records in a record file (album or cabinet) when not in use. If any records should become warped, place them on a flat surface with a flat heavy article, such as a large book, on top and leave them in this position for a few days.

Controls and Moving Mechanism

Index and Record Reject Lever.—This lever is located near the right front corner of the motorboard with its index plate marked for four positions—"MANUAL," "12," "10," and "REJECT." When you desire to change record selections manually, this lever should be set in the "MANUAL" position. With the lever in the "12" position, the mechanism is set to play a series of 12-inch records automatically. To play either a series of 10-inch records, or 10- and 12-inch records mixed, the lever should be set at the "10" position.

To reject a record being played, or to start the record-changing cycle in case the record just played does not have the standard eccentric or spiral stopping groove, simply push the lever to the "REJECT" position and let go. The pickup will raise up and swing outwards and the next record will drop down. Upon releasing the lever, it will automatically return to the "10" position. If you are playing a series of 12-inch records, the lever should be returned to the "12" position after rejecting a record. Keep the lever in its "MANUAL" position when not actually playing records automatically.

Turntable Switch.—The toggle switch located just in front of the Index and Record Reject Lever controls the current to the turntable motor. To start the turntable, throw the switch to the "ON" position. To stop the turntable throw the switch to the "OFF" position.

Pickup and Top-Loading Needle Socket.—The pickup is the new crystal type, with a hole in the top for insertion of needles. When not playing records, the pickup arm should be moved out to the right beyond the turntable and placed at rest on the support with the edge of the pickup arm in the groove and the pickup over the needle gauge plate. The pickup must be in this position to change needles.

To insert a needle initially, loosen the needle screw on the front of the pickup, place needle in hole at top so that it drops down against the needle gauge plate and then tighten up the needle screw.

Needle Ejector.—The extending tab on the needle gauge plate of the needle box operates the needle ejector. To change a needle, place pickup in rest position, loosen needle screw and press the extending tab on the needle gauge plate to drop the used needle into the box below. Release tab, allowing the needle gauge plate to swing back, and then insert a new needle in the pickup as described above.

Record Holder Shelves.—To place a record on the turntable or to remove records, raise the record holder shelves, by lifting with the fingers under the shelf, and swing clear of outer edge of record. Also push back vertical lever adjacent to the rear record holder post. You now have clear access to the turntable. Before loading the magazine for Automatic Operation swing the record holder shelves back into position.

Automatic Operation

1. See that pickup is over needle gauge plate with needle properly in place. If not, complete a "cycle" as explained in the first paragraph under "OPERATION."
2. With Index and Record Reject Lever at "MANUAL," place the first of the series of records on the turntable and the remainder of the series (up to seven 10-inch or six 12-inch records) on the record holder posts (as shown in Figure 1). The records should be arranged in the desired order with the desired selection face up and the last selection on top.
3. Set the Index and Record Reject Lever to the proper position. (See CONTROLS: — INDEX AND RECORD REJECT LEVER.)
4. Throw Turntable Switch to the left—"ON"—turntable should commence to revolve.
5. When turntable has attained speed, lift pickup and lower gently on to the record so that the needle point enters the outside groove.
6. Close the lid of the cabinet to eliminate mechanical reproduction of sound by the needle.

The whole series of records will now play without further attention, and the last record will repeat until the Turntable Switch is turned off. Allow the record-changing mechanism to complete its cycle before the turntable is stopped. Then lift the pickup, swing the arm to the right beyond the edge of the record and lower it onto the pickup rest with pickup over needle gauge plate. The record player is then ready for reloading, or for manual operation.

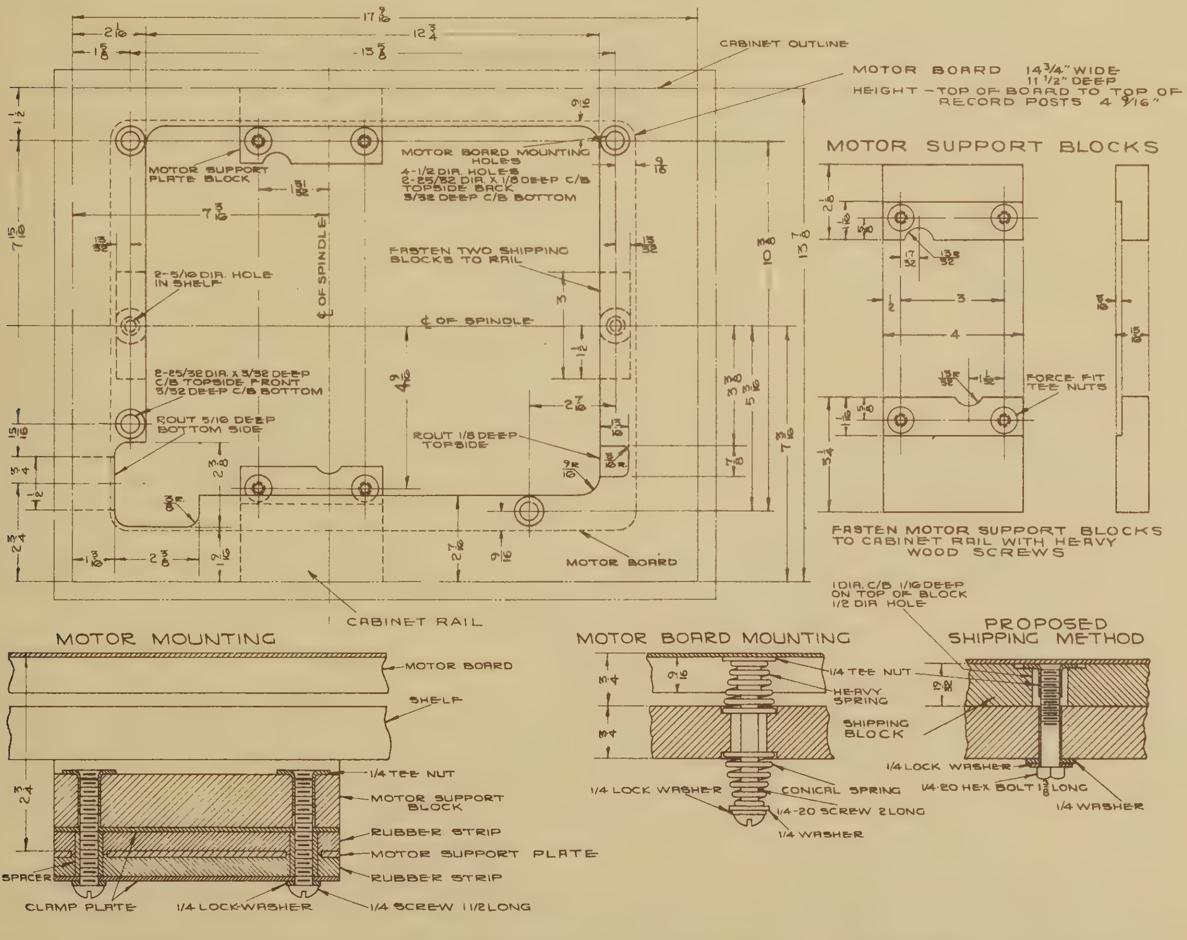
Manual Operation

To play records manually:

1. Proceed as in step 1, under "AUTOMATIC OPERATION."
2. Place record on turntable with desired selection upwards.
3. Set Index and Record Reject Lever to "MANUAL" position.
4. Proceed as in steps 4, 5 and 6 under "AUTOMATIC OPERATION."

When you have finished playing, be sure that the turntable has stopped and the pickup is in the rest position over needle gauge plate. Never leave pickup with needle resting on a record or on the turntable.

Good reproduction can only be obtained with the turntable revolving at 78 revolutions per minute. For speed check and regulation see INSTALLATION, page 1.



MOUNTING DETAILS FOR *9844 AUTOMATIC RECORD CHANGER

INSTRUCTIONS
FOR
INSTALLATION, OPERATION AND SERVICE
RCA MANUAL MOTORBOARD
STOCK NO. 9850

This Motorboard is for use on a power supply of 110 volts, 60 cycles. When properly connected to a suitable amplifier it will play any size record, up to 12-inch, of the 78 revolutions per minute type. Records of the last few years with the standard eccentric or spiral stopping groove automatically throw the turntable switch at the end of a selection.

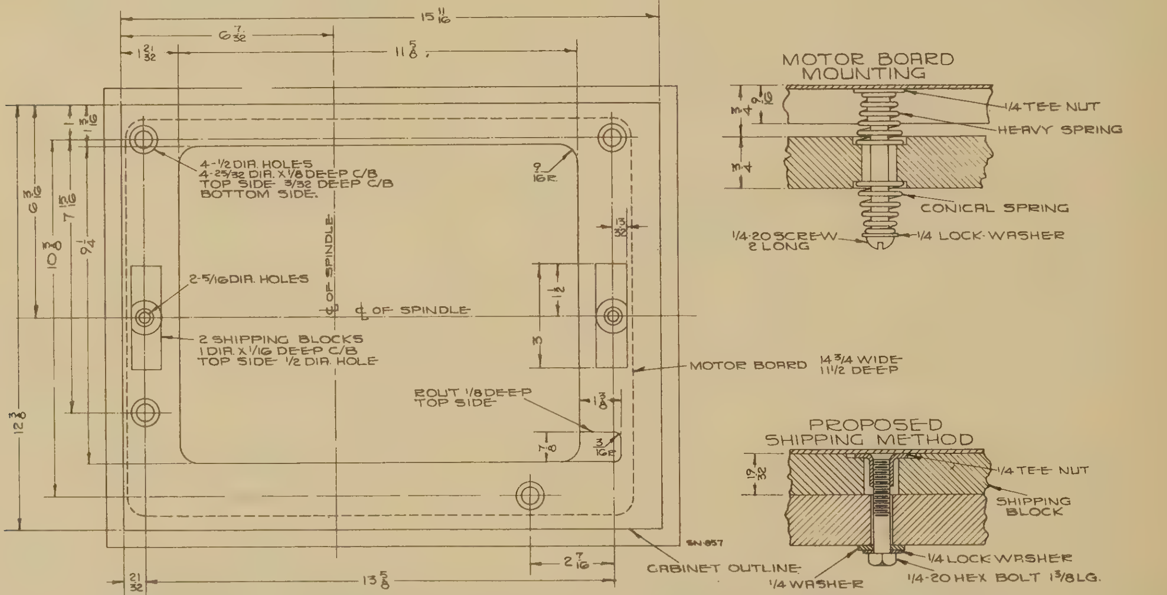
INSTALLATION

The Motorboard as supplied includes a pickup and motor assembled ready for mounting on a cabinet rail. This rail must be drilled in accordance with the dimensions shown in the drawing, Figure 1.

Place the Motorboard in position on the cabinet rail with the four upper mounting springs located as shown in Figure 1. Then place lockwashers and the four lower mounting springs on the screws and insert the screws upwards through the rail to secure the motorboard in place.

Make sure the motorboard is level in the cabinet and then tighten up the screws as far as they will go to compress the eight mounting springs. The turntable, rubber spindle piece, washer and needle box are in a separate package.

Place the matal washer over the spindle so that the grooved extension fits over the pin in the spindle. Assemble the rubber spindle piece securely over the spindle on top of the washer. Then lower the turntable over the rubber spindle piece to hold firmly and revolve with the spindle.



MOUNTING DETAILS FOR #9850 MANUAL MOTORBOARD

FIGURE 1 - MOUNTING DETAILS

NEEDLE BOX

The needle box is in a separate package. Place the box in the hole in the motorboard with the needle ejector tab toward the front. To do this tilt the box upwards at front and lower into hole with the lug on back of box in the slot in the motorboard. Slide the lug under the motorboard and the box drops in place.

SPEED REGULATION AND LUBRICATION

For location of oil holes and speed regulator see Figures 2 and 3. Remove turntable from spindle by holding the turntable under the edges and lifting straight up. Rotating the turntable back and forth slightly while lifting will facilitate its removal. With the turntable removed, the oil holes and speed regulator screw are easily accessible.

A few drops of light machine oil should be applied at the base of the spindle below the metal washer and in each of the two oil holes, as shown in Figures 2 and 3. This should be done about once every six months.

Speed Regulation - After the phonograph is in operation, the speed should be checked while playing a record.

1. Place a piece of white paper between the edge of the record and the turntable so that a portion of it is plainly visible.

2. Start playing a selection and count the number of revolutions per minute with the aid of a watch.

3. If not 78, turn off turntable switch and remove turntable, as described above, to give access to speed regulator screw.

4. By means of a screwdriver, turn regulator screw to the right (clockwise) to decrease speed, or to the left (counterclockwise) to increase speed.

5. Replace turntable and replay record. Recount and adjust until speed is checked at 78 r.p.m.

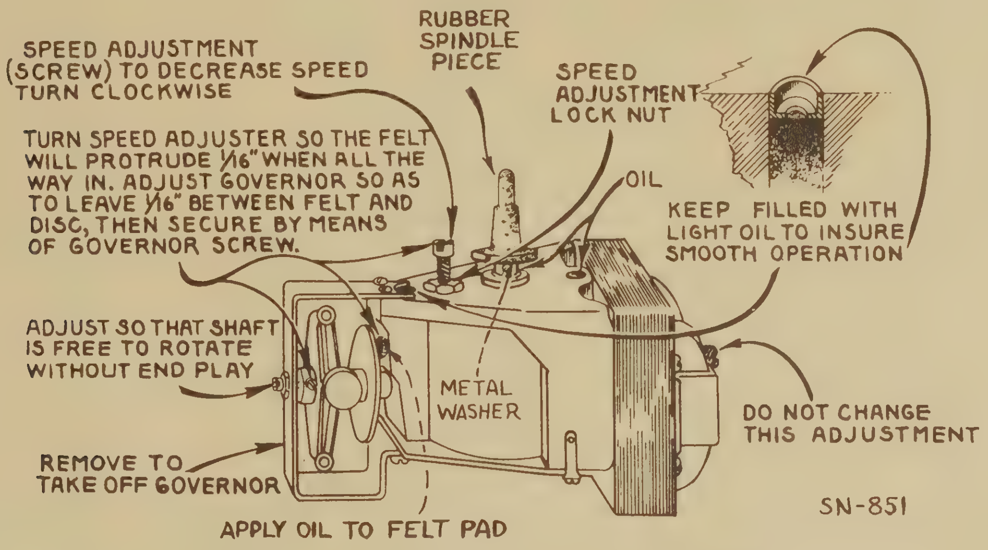

RUBBER SPINDLE PIECE
SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
METAL WASHER
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
APPLY OIL TO FELT PAD
SN-851

FIGURE 2 - MOTOR LUBRICATION AND ADJUSTMENTS

OPERATION

CONTROLS AND MOVING MECHANISM

Turntable Switch - The lever projecting on the right from beneath the turntable, when pushed towards the back of the cabinet, switches on the current to the turntable motor, and sets the turntable in motion. To stop turntable, move pickup towards center before returning it to the pickup rest. This actuates the turntable switch.

Pickup And Top-Loading Needle Socket - The pickup is the new crystal type, with a hole in the top for insertion of needles. When not playing records, the pickup arm should be moved out to the right beyond the turntable and placed on the pickup rest over the needle gauge plate. The pickup must be in this position to change needles.

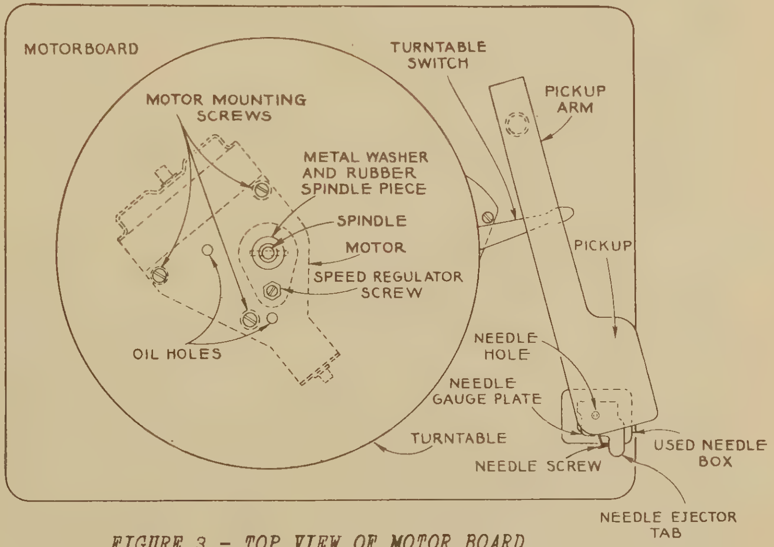


FIGURE 3 - TOP VIEW OF MOTOR BOARD

To insert a needle initially, loosen the needle screw on the front of the pickup, place needle in hole in top so that it drops down against the needle plate, press down on pickup to seat it squarely on the needle box and then tighten up the needle screw.

Needle Ejector - The extending tab on the needle gauge plate operates the needle ejector. To change a needle, place pickup on rest, with edge of pickup arm in groove, loosen needle screw and press the extending tab on the needle gauge plate to drop the used needle into the box below. Release tab, allowing the needle gauge plate to swing back and then insert a new needle in the pickup as described above.

PLAYING

To play records, proceed as follows:

1. See that pickup is over needle gauge plate with needle properly in place.

2. Place record on turntable with desired selection upwards.

3. Push Turntable Switch Lever towards back of cabinet - turntable should commence to revolve.

4. When turntable has attained speed, lift pickup and lower gently on to the record so that the needle point enters the outside groove.

Good reproduction can only be obtained with the turntable revolving at 78 revolutions-per-minute. For speed check and regulation see "Installation".

After the selection is completed, lift the pickup, swing the arm to the right beyond the edge of the record and lower it on to the pickup rest with the edge of the pickup arm in the groove and the needle over the needle gauge plate.

Records may be changed with the turntable revolving.

Records with the standard eccentric or spiral stopping groove automatically stop at the end of a selection.

If the record does not have the stopping groove, the turntable may be stopped by swinging the pickup in towards the center before moving it out to the pickup rest.

When you have finished playing, be sure that the turntable has stopped and the pickup is in the rest position over needle gauge plate. Never leave pickup with needle resting on a record or on the turntable.

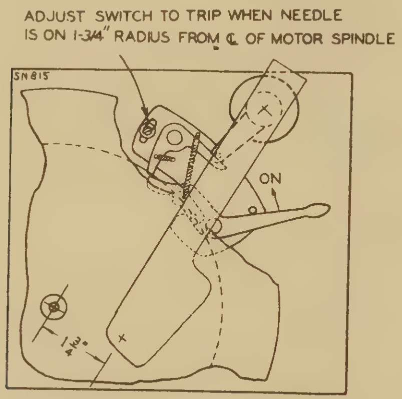

ADJUST SWITCH TO TRIP WHEN NEEDLE
IS ON 1-3/4" RADIUS FROM ℄ OF MOTOR SPINDLE
SN815
ON
1 3/4"

FIGURE 4 - ADJUSTMENT OF AUTOMATIC SWITCH

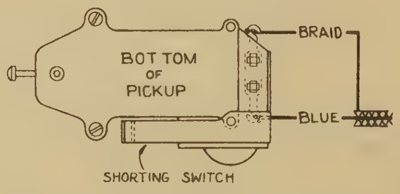


FIGURE 5 - PICKUP CONNECTIONS

NOTES

CRYSTAL PICKUP

The crystal pickup unit is thoroughly sealed in a metal casing as protection against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed (Stock #31156).

LUBRICATION AND ADJUSTMENTS

Lubrication and adjustments are described in the accompanying illustrations. Note that the switch lever should be adjusted so that the lever will snap to the "OFF" position when the pickup needle is 1-3/4 inches from the center-line of the spindle.

SPECIFICATIONS

Motor -

Type	Self-starting induction
Turntable Speed . . .	78 r.p.m. (adjustable)
Record Diameter	10-inch or 12 inch

Pickup -

Type	Crystal
Impedance	100,000 ohms at 1000 cycles
Average Output . . .	1-1/2 volts at 1000 cycles across 250,000 ohm load

RADIO TUBE CHART

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TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS		CATHODE TYPE AND RATING			USE Values to right give operating conditions and characteristics for indicated typical use	PLATE SUPPLY VOLTS	GRID BIAS ■ VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURRENT MA.	PLATE CURRENT MA.	A-C PLATE RESISTANCE OHMS	TRANSCONDUCTANCE (GRID-PLATE) µMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S.C.	C.T.	VOLTS	AMP.												
00-A	DETECTOR TRIODE	D12	4D	D.C. F	5.0	0.25	GRID-LEAK DETECTOR	45	Grid Return to (−) Filament			1.5	30000	666	20	——	——	00-A
01-A	DETECTOR★ AMPLIFIER	D12	4D	D.C. F	5.0	0.25	CLASS A AMPLIFIER	90 135	− 4.5 − 9.0	——	——	2.5 3.0	11000 10000	725 800	8.0 8.0	——	——	01-A
0A4-G	GAS-TRIODE	D3	G-4V	Cold	——	——	RELAY SERVICE	Peak Cathode Current, 100 max. ma. D-C Cathode Current, 25 max. ma. Starter-Anode Drop, 60 approx. volts. Anode Drop, 70 approx. volts.										0A4-G
0Z4	FULL-WAVE GAS RECTIFIER	B3	4R	Cold	——	——	RECTIFIER	Starting-Supply Voltage per Plate, 300 min. peak volts. Peak Plate Current, 200 max. ma. D-C Output Current, 75 max., 30 min. ma. D-C Output Voltage, 300 max. volts.										0Z4
0Z4-G	FULL-WAVE GAS RECTIFIER	B1	G-4R◆	Cold	——	——	RECTIFIER											0Z4-G
1A4-P	SUPER-CONTROL R-F AMPLIFIER PENTODE	D9	4M	D.C. F	2.0	0.06	AMPLIFIER	For other characteristics, refer to Type 1D5-GP.										1A4-P
1A5-G	POWER AMPLIFIER PENTODE	D1	G-6X	D.C. F	1.4	0.05	CLASS A AMPLIFIER	85 90	− 4.5 − 4.5	85 90	0.7 0.8	3.5 4.0	300000 300000	800 850	240 255	25000 25000	0.100 0.115	1A5-G
1A6	PENTAGRID CONVERTER ⊙	D9	6L	D.C. F	2.0	0.06	CONVERTER	For other characteristics, refer to Type 1D7-G.										1A6
1A7-G	PENTAGRID CONVERTER ⊙	D6	G-7Z	D.C. F	1.4	0.05	CONVERTER	90	0	45♣	0.6	0.55	600000	Anode-Grid (#2): 90 max. volts, 1.2 ma. Oscillator-Grid (#1) Resistor, 0.2 meg. Conversion Conductance, 250 micromhos.				1A7-G
1B4-P	R-F AMPLIFIER PENTODE	D9	4M	D.C. F	2.0	0.06	AMPLIFIER	For other characteristics, refer to Type 1E5-GP.										1B4-P
1B5/25S	DUPLEX-DIODE TRIODE	D6	6M	D.C. F	2.0	0.06	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 1H6-G.										1B5/25S
1C5-G	POWER AMPLIFIER PENTODE	D1	G-6X	D.C. F	1.4	0.10	CLASS A AMPLIFIER	83 90	− 7.0 − 7.5	83 90	1.6 1.6	7.0 7.5	110000 115000	1500 1550	165 180	9000 8000	0.20 0.24	1C5-G
1C6	PENTAGRID CONVERTER ⊙	D9	6L	D.C. F	2.0	0.12	CONVERTER	For other characteristics, refer to Type 1C7-G.										1C6
1C7-G	PENTAGRID CONVERTER⊙	D8	G-7Z	D.C. F	2.0	0.12	CONVERTER	135 180	{− 3.0 min.}	67.5 67.5	2.0 2.0	1.3 1.5	550000 750000	Anode-Grid (#2): 180◥ max. volts, 3.3 ma. Oscillator-Grid (#1) Resistor ●. Conversion Conductance, 325 micromhos.				1C7-G
1D5-GP	SUPER-CONTROL R-F AMPLIFIER PENTODE	D8	G-5Y	D.C. F	2.0	0.06	CLASS A AMPLIFIER	90 180	{− 3.0 min.}	67.5 67.5	0.9 0.8	2.2 2.3	600000 1000000	720 750	425 750	——	——	1D5-GP
1D7-G	PENTAGRID CONVERTER⊙	D8	G-7Z	D.C. F	2.0	0.06	CONVERTER	135 180	{− 3.0 min.}	67.5 67.5	2.5 2.4	1.2 1.3	400000 500000	Anode-Grid (#2): 180◥ max. volts, 2.3 ma. Oscillator-Grid (#1) Resistor●. Conversion Conductance, 300 micromhos.				1D7-G
1E5-GP	R-F AMPLIFIER PENTODE	D8	G-5Y	D.C. F	2.0	0.06	CLASS A AMPLIFIER	90 180	− 3.0 − 3.0	67.5 67.5	0.7 0.6	1.6 1.7	1000000 1500000	600 650	550 1000	——	——	1E5-GP
1E7-G	TWIN PENTODE POWER AMPLIFIER	D3	G-8C	D.C. F	2.0	0.24	CLASS A AMPLIFIER	135	− 7.5	135	——	Power Output is for one tube at stated plate-to-plate load.				24000	0.65	1E7-G
1F4	POWER AMPLIFIER PENTODE	D12	5K	D.C. F	2.0	0.12	AMPLIFIER	For other characteristics, refer to Type 1F5-G.										1F4
1F5-G	POWER AMPLIFIER PENTODE	D10	G-6X	D.C. F	2.0	0.12	CLASS A AMPLIFIER	90 135	− 3.0 − 4.5	90 135	1.3 2.6	4.0 8.0	240000 200000	1400 1700	340 340	20000 16000	0.12 0.34	1F5-G
1F6	DUPLEX-DIODE PENTODE	D9	6W	D.C. F	2.0	0.06	PENTODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 1F7-GV.										1F6
1F7-GV	DUPLEX-DIODE PENTODE	D8	G-7AD	D.C. F	2.0	0.06	PENTODE UNIT AS R-F AMPLIFIER	180	− 1.5	67.5	0.6	2.0	1000000	650	650	——	——	1F7-GV
							PENTODE UNIT AS A-F AMPLIFIER	135✖	− 2.0	Screen Supply, 135 volts applied through 0.8-megohm resistor. Grid Resistor,** 1.0 megohm. Voltage Gain, 46.								
1G5-G	POWER AMPLIFIER PENTODE	D10	G-6X	D.C. F	2.0	0.12	CLASS A AMPLIFIER	90 135	− 6.0 −13.5	90 135	2.5 2.5	8.5 8.7	133000 160000	1500 1550	200 250	8500 9000	0.25 0.55	1G5-G
1G6-G	TWIN TRIODE AMPLIFIER	D1	G-7AB	D.C. F	1.4	0.10	CLASS B AMPLIFIER	90	0	——	——	Power Output is for one tube at stated plate-to-plate load.				12000	0.45	1G6-G
1H4-G	DETECTOR★ AMPLIFIER	D3	G-5S	D.C. F	2.0	0.06	CLASS A AMPLIFIER	90 135 180	− 4.5 − 9.0 −13.5	——	——	2.5 3.0 3.1	11000 10300 10300	850 900 900	9.3 9.3 9.3	——	——	1H4-G
							CLASS B AMPLIFIER	157.5	−15.0	——	——	1.0♠	——	——	——	8000	2.1†	
1H5-G	DIODE HIGH-MU TRIODE	D6	G-5Z	D.C. F	1.4	0.05	TRIODE UNIT AS CLASS A AMPLIFIER	90	0	——	——	0.14	240000	275	65	——	——	1H5-G
1H6-G	DUPLEX-DIODE TRIODE	D3	G-7AA	D.C. F	2.0	0.06	TRIODE UNIT AS CLASS A AMPLIFIER	135	− 3.0	——	——	0.8	35000	575	20	——	——	1H6-G
1J6-G	TWIN TRIODE AMPLIFIER	D3	G-7AB	D.C. F	2.0	0.24	CLASS B AMPLIFIER	135 135	0 − 3.0	——	——	Power Output is for one tube at stated plate-to-plate load.				10000 10000	2.1 1.9	1J6-G
1N5-G	R-F AMPLIFIER PENTODE	D6	G-5Y	D.C. F	1.4	0.05	CLASS A AMPLIFIER	90	0	90	0.3	1.2	1500000	750	1160	——	——	1N5-G
1-V	HALF-WAVE RECTIFIER	D5	4G	H	6.3	0.3		Maximum A-C Plate Voltage.............350 Volts, RMS Maximum D-C Output Current.............50 Milliamperes										1-V
2A3	POWER AMPLIFIER TRIODE	E3	4D	F	2.5	2.5	CLASS A AMPLIFIER	250	−45.0	——	——	60.0	800	5250	4.2	2500	3.5	2A3
							PUSH-PULL CLASS AB₁ AMPLIFIER	300 300	Self-bias, 780 ohms♠ −62 volts, fixed bias			80.0♠ 80.0♠	——	——	——	5000 3000	10.0† 15.0†	
2A5	POWER AMPLIFIER PENTODE	D12	6B	H	2.5	1.75	AMPLIFIER	For other characteristics, refer to Type 6F6.										2A5
2A6	DUPLEX-DIODE HIGH-MU TRIODE	D9	6G	H	2.5	0.8	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6SQ7.										2A6
2A7	PENTAGRID CONVERTER ⊙	D9	7C	H	2.5	0.8	CONVERTER	For other characteristics, refer to Type 6A7.										2A7
2B7	DUPLEX-DIODE PENTODE	D9	7D	H	2.5	0.8	PENTODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6B8-G.										2B7
5T4	FULL-WAVE RECTIFIER	D7	5T	F	5.0	2.0	A-C Voltage per Plate (Volts RMS)............ 450 550 D-C Output Current (Maximum Ma.)............ 250 250 The 550-volt rating applies to filter circuits having an input choke of at least 10 henries.											5T4
5U4-G	FULL-WAVE RECTIFIER	E2	G-5T‡	F	5.0	3.0		Maximum A-C Voltage per Plate.............500 Volts, RMS Maximum D-C Output Current.............250 Milliamperes										5U4-G
5V4-G	FULL-WAVE RECTIFIER	D10	G-5L‡	H	5.0	2.0		Maximum A-C Voltage per Plate 400 Volts, RMS Maximum D-C Output Current........ 200 Milliamperes										5V4-G
5W4	FULL-WAVE RECTIFIER	C2	5T	F	5.0	1.5		A-C Voltage per Plate (Volts, RMS) 350 400 D-C Output Current (Maximum Ma.) . 110 90										5W4
5X4-G	FULL-WAVE RECTIFIER	E2	G-5Q	F	5.0	3.0		For other ratings, refer to Type 5U4-G.										5X4-G
5Y3-G	FULL-WAVE RECTIFIER	D10	G-5T‡	F	5.0	2.0		Maximum A-C Voltage per Plate.............400 Volts, RMS Maximum D-C Output Current.............125 Milliamperes										5Y3-G
5Y4-G	FULL-WAVE RECTIFIER	D10	G-5Q	F	5.0	2.0	A-C Voltage per Plate (Volts RMS)......... 350 400 550 D-C Output Current (Maximum Ma.)..... 125 110 135 The 550-volt rating applies to filter circuits having an input choke of at least 20 henries.											5Y4-G
5Z3	FULL-WAVE RECTIFIER	E3	4C	F	5.0	3.0		For other ratings, refer to Type 5U4-G.										5Z3
5Z4	FULL-WAVE RECTIFIER	C2	5L	H	5.0	2.0		Maximum A-C Voltage per Plate.............400 Volts, RMS Maximum D-C Output Current.............125 Milliamperes										5Z4
6A4/LA	POWER AMPLIFIER PENTODE	D12	5B	F	6.3	0.3	CLASS A AMPLIFIER	100 180	− 6.5 −12.0	100 180	1.6 3.9	9.0 22.0	83250 45500	1200 2200	100 100	11000 8000	0.31 1.40	6A4/LA
6A6	TWIN TRIODE AMPLIFIER	D12	7B	H	6.3	0.8	AMPLIFIER	For other characteristics, refer to Type 6N7.										6A6
6A7	PENTAGRID CONVERTER ⊙	D9	7C	H	6.3	0.3	CONVERTER	100 250	−1.5 min. −3.0 min.	50 100	1.3 2.7	1.1 3.5	600000 360000	Anode-Grid (#2): 250◥ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor ●. Conversion Conductance, 520 micromhos.				6A7
6A8	PENTAGRID CONVERTER ⊙	C1	8A	H	6.3	0.3	CONVERTER	100 250	−1.5 min. −3.0 min.	50 100	1.5 3.2	1.2 3.3	600000 360000	Anode-Grid (#2): 250◥ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor ●. Conversion Conductance, 500 micromhos.				6A8
6A8-G	PENTAGRID CONVERTER⊙	D8	G-8A‡	H	6.3	0.3	CONVERTER	100 250	− 1.5 min. − 3.0 min.	50 100	1.3 2.7	1.1 3.5	600000 360000	Anode-Grid (#2): 250◥ max. volts, 4.0 ma. Oscillator-Grid (#1) Resistor ●. Conversion Conductance, 550 micromhos.				6A8-G
6A8-GT	PENTAGRID CONVERTER ⊙	C3	G-8A‡	H	6.3	0.3	CONVERTER	For other characteristics, refer to Type 6A8.										6A8-GT
6AC5-G	HIGH-MU POWER AMPLIFIER TRIODE	D3	G-6Q‡	H	6.3	0.4	CLASS B AMPLIFIER	250	0	——	——	5.0♠	——	——	——	10000	8.0†	6AC5-G
							DYNAMIC-COUPLED AMPLIFIER WITH TYPE 76 DRIVER	250	Bias for both 6AC5-G and 76 is developed in coupling circuit. Average Plate Current of Driver = 5.5 milliamperes. Average Plate Current of 6AC5-G = 32 milliamperes.							7000	3.7	
6AF6-G	ELECTRON-RAY TUBE Twin Indicator Type	B2	G-7AG	H	6.3	0.15	VISUAL INDICATOR	Target Voltage, 100 volts. Control-Electrode Voltage, 0 volts; Shadow Angle, 100°; Target Current, 0.9 ma. Control-Electrode Voltage, 60 volts; Angle, 0°.										6AF6-G
								Target Voltage, 135 volts. Control-Electrode Voltage, 0 volts; Shadow Angle, 100°; Target Current, 1.5 ma. Control-Electrode Voltage, 81 volts; Angle, 0°.										
6B6-G	DUPLEX-DIODE HIGH-MU TRIODE	D8	G-7V‡	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	250	− 2.0	——	——	1.0	91000	1100	100	——	——	6B6-G
6B7	DUPLEX-DIODE PENTODE	D9	7D	H	6.3	0.3	PENTODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6B8-G.										6B7
6B8	DUPLEX-DIODE PENTODE	C1	8E	H	6.3	0.3	PENTODE UNIT AS R-F AMPLIFIER	250	− 3.0	125	2.3	10.0	600000	1325	800	——	——	6B8
							PENTODE UNIT AS A-F AMPLIFIER	90✖ 300✖	Self-bias, 3500 ohms. Screen Resistor = 1.1 meg. Self-bias, 1600 ohms. Screen Resistor = 1.2 meg.					Grid Resistor,** 0.5 megohm.		Gain per stage = 55 Gain per stage = 79		

TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS		CATHODE TYPE AND RATING			USE Values to right give operating conditions and characteristics for indicated typical use	PLATE SUPPLY VOLTS	GRID BIAS ■ VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURRENT MA.	PLATE CURRENT MA.	A-C PLATE RESISTANCE OHMS	TRANSCONDUCTANCE (GRID-PLATE) μMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S.C.	C.T.	VOLTS	AMP.												
6B8-G	DUPLEX-DIODE PENTODE	D8	G-8E‡	H	6.3	0.3	PENTODE UNIT AS R-F AMPLIFIER	100 250	−3.0 −3.0	100 125	1.7 2.3	5.8 9.0	300000 650000	950 1125	285 730	—	—	6B8-G
							PENTODE UNIT AS A-F AMPLIFIER	90✖ 300✖	Self-bias, 3500 ohms. Screen Resistor = 1.1 meg. Self-bias, 1600 ohms. Screen Resistor = 1.2 meg.				Grid Resistor,** 0.5 megohm.			Gain per stage = 55 Gain per stage = 79		
6C5	DETECTOR★ AMPLIFIER TRIODE	B3	6Q	H	6.3	0.3	CLASS A AMPLIFIER	250	−8.0	—	—	8.0	10000	2000	20	—	—	6C5
								90♥ 300♥	Self-bias, 6400 ohms. Self-bias, 5300 ohms.				Grid Resistor,** 0.25 megohm			Gain per stage = 11 Gain per stage = 13		
							BIAS DETECTOR	250	−17.0 approx. Plate current to be adjusted to 0.2 milliampere with no signal.									
6C5-G	DETECTOR★ AMPLIFIER TRIODE	D3	G-6Q‡‡	H	6.3	0.3	AMPLIFIER DETECTOR	For other characteristics, refer to Type 6C5.										6C5-G
6C6	TRIPLE-GRID DETECTOR AMPLIFIER	D13	6F	H	6.3	0.3	AMPLIFIER DETECTOR	For other characteristics, refer to Type 6J7.										6C6
6C8-G	TWIN TRIODE AMPLIFIER	D8	G-8G	H	6.3	0.3	EACH UNIT AS AMPLIFIER	250	−4.5	—	—	3.2	22500	1600	36	—	—	6C8-G
6D6	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D13	6F	H	6.3	0.3	AMPLIFIER MIXER	For other characteristics, refer to Type 6U7-G.										6D6
6D8-G	PENTAGRID CONVERTER⊙	D8	G-8A‡	H	6.3	0.15	CONVERTER	135 250	−3.0 min.	67.5 100	— —	— —	400000 320000	Anode-Grid (#2): 250◆ max. volts. Oscillator-Grid (#1) Resistor ●. Conversion Conductance, 500 micromhos.				6D8-G
6E5	ELECTRON-RAY TUBE	D5	6R	H	6.3	0.3	VISUAL INDICATOR	Plate & Target Supply = 100 volts. Triode Plate Resistor = 0.5 meg. Target Current = 1.0 ma. Grid Bias, −3.3 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°; Plate Current, 0.19 ma.										6E5
								Plate & Target Supply = 250 volts. Triode Plate Resistor = 1.0 meg. Target Current = 4.0 ma. Grid Bias, −8.0 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°; Plate Current, 0.24 ma.										
6F5	HIGH-MU TRIODE	C1	5M	H	6.3	0.3	AMPLIFIER	For other characteristics, refer to Type 6SF5.										6F5
6F5-G	HIGH-MU TRIODE	D8	G-5M‡‡	H	6.3	0.3	AMPLIFIER	For other characteristics, refer to Type 6SF5.										6F5-G
6F6	POWER AMPLIFIER PENTODE	C2	7S	H	6.3	0.7	PENTODE CLASS A AMPLIFIER	250 315	−16.5 −22.0	250 315	6.5 8.0	34.0 42.0	80000 75000	2500 2650	200 200	7000 7000	3.0 5.0	6F6
							TRIODE□ CLASS A AMPLIFIER	250	−20.0	—	—	31.0	2600	2600	6.8	4000	0.85	
							PENTODE PUSH-PULL CLASS A AMPLIFIER	315 315	Self-bias −22.0	315 315	16.0♠ 16.0♠	84.0♠ 84.0♠	Self-Bias Resistor, 220 ohms♠ —	 —	 —	10000 10000	13.0† 13.0†	
							PENTODE PUSH-PULL CLASS AB_2 AMPLIFIER	375 375	Self-bias −26.0	250 250	8.0♠ 5.0♠	54.0♠ 34.0♠	Self-Bias Resistor, 340 ohms♠ —	 —	 —	10000 10000	19.0† 19.0†	
							TRIODE PUSH-PULL□ CLASS AB_2 AMPLIFIER	350 350	Self-bias −38.0	—	—	50.0♠ 45.0♠	Self-Bias Resistor, 730 ohms♠ —	 —	 —	10000 6000	14.0† 18.0†	
6F6-G	POWER AMPLIFIER PENTODE	D10	G-7S‡	H	6.3	0.7	AMPLIFIER	For other characteristics, refer to Type 6F6.										6F6-G
6F7	TRIODE-PENTODE	D9	7E	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	100	−3.0	—	—	3.5	16000	500	8	—	—	6F7
							PENTODE UNIT AS CLASS A AMPLIFIER	100 250	−3.0 min.	100 100	1.6 1.5	6.3 6.5	290000 850000	1050 1100	300 900	—	—	
							PENTODE UNIT AS MIXER	250	−10.0	100	0.6	2.8	Oscillator Peak Volts = 7.0. Conversion Conductance = 300 micromhos.					
6F8-G	TWIN TRIODE AMPLIFIER	D8	G-8G	H	6.3	0.6	EACH UNIT AS AMPLIFIER	250	−8.0	—	—	9.0	7700	2600	20	—	—	6F8-G
6G6-G	POWER AMPLIFIER PENTODE	D3	G-7S‡	H	6.3	0.15	CLASS A AMPLIFIER	135 180	−6.0 −9.0	135 180	2.0 2.5	11.5 15.0	170000 175000	2100 2300	360 400	12000 10000	0.6 1.1	6G6-G
6H6	TWIN DIODE	A1	7Q	H	6.3	0.3	DETECTOR RECTIFIER	Maximum A-C Voltage per Plate..........100 Volts, RMS Maximum D-C Output Current..........4 Milliamperes										6H6
6H6-G	TWIN DIODE	D3	G-7Q‡‡	H	6.3	0.3	DETECTOR RECTIFIER	For other ratings, refer to Type 6H6.										6H6-G
6J5	DETECTOR AMPLIFIER TRIODE	B3	6Q	H	6.3	0.3	CLASS A AMPLIFIER	250	−8.0	—	—	9.0	7700	2600	20	—	—	6J5
6J5-G	DETECTOR AMPLIFIER TRIODE	D3	G-6Q‡	H	6.3	0.3	AMPLIFIER	For other characteristics, refer to Type 6J5.										6J5-G
6J7	TRIPLE-GRID DETECTOR AMPLIFIER	C1	7R	H	6.3	0.3	CLASS A R-F AMPLIFIER	100 250	−3.0 −3.0	100 100	0.5 0.5	2.0 2.0	1000000 1.5+§	1185 1225	1185 1500+	—	—	6J7
							CLASS A A-F AMPLIFIER	90✖ 300✖	Self-bias, 2600 ohms. Screen Resistor = 1.2 meg. Self-bias, 1200 ohms. Screen Resistor = 1.2 meg.				Grid Resistor,** 0.5 megohm.			Gain per stage = 85 Gain per stage = 140		
							BIAS DETECTOR	250	−4.3	100	Cathode current 0.43 ma.		—	Plate Resistor, 500000 ohms. Grid Resistor,** 250000 ohms.				
6J7-G	TRIPLE-GRID DETECTOR AMPLIFIER	D8	G-7R‡‡	H	6.3	0.3	AMPLIFIER DETECTOR	For other characteristics, refer to Type 6J7.										6J7-G
6K5-G	HIGH-MU TRIODE	D8	G-5U	H	6.3	0.3	CLASS A AMPLIFIER	100 250	−1.5 −3.0	— —	— —	0.35 1.1	78000 50000	900 1400	70 70	— —	— —	6K5-G
6K6-G	POWER AMPLIFIER PENTODE	D3	G-7S‡	H	6.3	0.4	CLASS A AMPLIFIER	100 250	−7.0 −18.0	100 250	1.6 5.5	9.0 32.0	103500 68000	1450 2200	150 150	12000 7600	0.33 3.40	6K6-G
6K7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C1	7R	H	6.3	0.3	CLASS A AMPLIFIER	90 250	−3.0 min.	90 125	1.3 2.6	5.4 10.5	315000 600000	1275 1650	400 990	—	—	6K7
							MIXER IN SUPERHETERODYNE	250	−10.0	100	—	—	Oscillator Peak Volts = 7.0					
6K7-G	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D8	G-7R‡	H	6.3	0.3	AMPLIFIER MIXER	For other characteristics, refer to Type 6K7.										6K7-G
6K7-GT	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C3	G-7R‡	H	6.3	0.3	CLASS A AMPLIFIER	100 250	−3.0 min.	100 100	1.6 1.7	6.5 7.0	250000 800000	1325 1450	350 1160	—	—	6K7-GT
6K8	TRIODE-HEXODE CONVERTER	C1	8K	H	6.3	0.3	TRIODE UNIT AS OSCILLATOR	100	Triode-Grid Resistor●			3.8	Triode-Grid & Hexode-Grid Current, 0.15 ma.					6K8
							HEXODE UNIT AS MIXER	100 250	−3.0 min.	100 100	6.2 6.0	2.3 2.5	400000 600000	Conversion Conductance, 325 micromhos. Conversion Conductance, 350 micromhos.				
6L5-G	DETECTOR AMPLIFIER TRIODE	D3	G-6Q‡	H	6.3	0.15	CLASS A AMPLIFIER	135 250	−5.0 −9.0	— —	— —	3.5 8.0	11300 9000	1500 1900	17 17	—	—	6L5-G
6L6	BEAM POWER AMPLIFIER	D7	7AC	H	6.3	0.9	SINGLE-TUBE CLASS A_1 AMPLIFIER	250 250	−14.0 Self-bias	250 250	5.0 5.4	72.0 75.0	— Self-Bias Resistor, 170 ohms.	—	—	2500 2500	6.5 6.5	6L6
							PUSH-PULL CLASS A_1 AMPLIFIER	250 250	−16.0 Self-bias	250 250	10.0♠ 10.0♠	120.0♠ 120.0♠	— Self-Bias Resistor, 125 ohms.♠	—	—	5000 5000	14.5† 13.8†	
							PUSH-PULL CLASS AB_1 AMPLIFIER	400 400	−25.0 Self-bias	300 300	6.0♠ 7.0♠	102.0♠ 112.0♠	— Self-Bias Resistor, 200 ohms.♠	—	—	6600 6600	34.0† 32.0†	
							PUSH-PULL CLASS AB_2 AMPLIFIER	400 400	−20.0 −25.0	250 300	4.0♠ 6.0♠	88.0♠ 102.0♠	—	—	—	6000 3800	40.0† 60.0†	
6L6-G	BEAM POWER AMPLIFIER	E2	G-7AC‡	H	6.3	0.9	AMPLIFIER	For other characteristics, refer to Type 6L6.										6L6-G
6L7	PENTAGRID MIXER ▲ AMPLIFIER	C1	7T	H	6.3	0.3	MIXER IN SUPERHETERODYNE	250	−3.0	100	7.1	2.4	Oscillator-Grid (#3) Bias, −10 volts. Grid #3 Peak Swing, 12 volts minimum. Conversion Conductance, 350 micromhos.					6L7
							CLASS A AMPLIFIER	250	−3.0 min.◖	100	6.5	5.3	800000	1100	880	—	—	
6L7-G	PENTAGRID MIXER ▲ AMPLIFIER	D8	G-7T‡	H	6.3	0.3	MIXER AMPLIFIER	For other characteristics, refer to Type 6L7.										6L7-G
6N5	ELECTRON-RAY TUBE	D5	6R	H	6.3	0.15	VISUAL INDICATOR	Plate & Target Supply = 135 volts. Triode Plate Resistor = 0.25 meg. Target Current = 2.0 ma. Grid Bias, −12.0 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°; Plate Current, 0.5 ma.										6N5
6N7	TWIN TRIODE AMPLIFIER	C2	8B	H	6.3	0.8	CLASS A AMPLIFIER (As Driver)⊙	250 294	−5.0 −6.0	—	—	6.0 7.0	11300 11000	3100 3200	35 35	20000 or more	exceeds 0.4	6N7
							CLASS B AMPLIFIER	250 300	0 0	—	—	Power Output is for one tube at stated plate-to-plate load.				8000 10000	8.0 10.0	
6N7-G	TWIN TRIODE AMPLIFIER	D10	G-8B‡	H	6.3	0.8	AMPLIFIER	For other characteristics, refer to Type 6N7.										6N7-G
6Q7	DUPLEX-DIODE HIGH-MU TRIODE	C1	7V	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	100 250	−1.5 −3.0	—	—	0.35 1.1	87500 58000	800 1200	70 70	—	—	6Q7
								90✖ 300✖	Self-bias, 7600 ohms. Self-bias, 3000 ohms.				Grid Resistor,** 0.5 megohm.			Gain per stage = 32 Gain per stage = 45		
6Q7-G	DUPLEX-DIODE HIGH-MU TRIODE	D8	G-7V‡	H	6.3	0.3	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6Q7.										6Q7-G
6Q7-GT	DUPLEX-DIODE HIGH-MU TRIODE	C3	G-7V‡	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	100 250	0 −3.0	—	—	2.3 1.1	43000 58000	1400 1200	60 70	—	—	6Q7-GT
6R7	DUPLEX-DIODE TRIODE	C1	7V	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	250	−9.0	—	—	9.5	8500	1900	16	—	—	6R7
								90♥ 300♥	Self-bias, 4400 ohms. Self-bias, 3800 ohms.				Grid Resistor,** 0.25 megohm.			Gain per stage = 10 Gain per stage = 10		
6R7-G	DUPLEX-DIODE TRIODE	D8	G-7V‡	H	6.3	0.3	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6R7.										6R7-G
6S7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C1	7R	H	6.3	0.15	CLASS A AMPLIFIER	135 250	−3.0 min.	67.5 100	0.9 2.0	3.7 8.5	— 1000000	1250 1750	— 1750	— —	— —	6S7
6S7-G	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D8	G-7R‡	H	6.3	0.15	AMPLIFIER	For other characteristics, refer to Type 6S7.										6S7-G
6SA7	PENTAGRID CONVERTER▲	B3	8R	H	6.3	0.3	MIXER	100 250	−2.0 −2.0	100 100	8.0 8.0	3.2 3.4	500000 800000	Grid #1 Resistor, 20000 ohms. Conversion Conductance, 450 micromhos.				6SA7
6SC7	TWIN TRIODE AMPLIFIER	B3	8S	H	6.3	0.3	EACH UNIT AS AMPLIFIER	250	−2.0	—	—	2.0	53000	1325	70	—	—	6SC7

TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS		CATHODE TYPE AND RATING			USE Values to right give operating conditions and characteristics for indicated typical use	PLATE SUPPLY VOLTS	GRID BIAS ■ VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURRENT MA.	PLATE CURRENT MA.	A-C PLATE RESISTANCE OHMS	TRANS-CONDUCTANCE (GRID-PLATE) µMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S. C.	C. T.	VOLTS	AMP.												
6SF5	HIGH-MU TRIODE	B3	6AB	H	6.3	0.3	CLASS A AMPLIFIER	250	−2.0	—		0.9	66000	1500	100		–	6SF5
								90 ✖ 300 ✖	Self-bias, 8800 ohms. Self-bias, 3200 ohms.			Grid Resistor,** 0.5 megohm.				Gain per stage = 43 Gain per stage = 63		
6SJ7	TRIPLE-GRID DETECTOR AMPLIFIER	B3	8N	H	6.3	0.3	CLASS A AMPLIFIER	100 250	−3.0 −3.0	100 100	0.9 0.8	2.9 3.0	700000 1500000	1575 1650	1100 2500	—	—	6SJ7
								90 ✖ 300 ✖	Self-bias, 1700 ohms. Self-bias, 860 ohms.			Grid Resistor,** 0.5 megohm.				Gain per stage = 93 Gain per stage 167		
6SK7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	B3	8N	H	6.3	0.3	CLASS A AMPLIFIER	100 250	−3.0 min	100 100	2.6 2.4	8.9 9.2	250000 800000	1900 2000	475 1600	—	—	6SK7
6SQ7	DUPLEX-DIODE HIGH-MU TRIODE	B3	8Q	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	250	−2.0	—		0.8	91000	1100	100	—	–	6SQ7
								90 ✖ 300 ✖	Self bias, 11000 ohms. Self-bias, 3900 ohms.			Grid Resistor, ** 0.5 megohm.				Gain per stage = 40 Gain per stage = 53		
6T7-G	DUPLEX-DIODE HIGH-MU TRIODE	D8	G-7V‡	H	6.3	0.15	TRIODE UNIT AS CLASS A AMPLIFIER	135 250	−1.5 −3.0	— —	—	0.9 1.2	65000 62000	1000 1050	65 65	—	—	6T7-G
6U5/6G5	ELECTRON-RAY TUBE	D4	6R	H	6.3	0.3	VISUAL INDICATOR	Plate & Target Supply = 100 volts. Triode Plate Resistor = 0.5 meg. Target Current = 1.0 ma. Grid Bias, −8 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°; Plate Current, 0.19 ma.										6U5/6G5
								Plate & Target Supply = 250 volts. Triode Plate Resistor = 1.0 meg. Target Current = 4.0 ma. Grid Bias, −22 volts; Shadow Angle, 0°. Bias, 0 volts; Angle, 90°; Plate Current, 0.24 ma.										
6U7-G	TRIPLE GRID SUPER-CONTROL AMPLIFIER	D8	G-7R‡	H	6.3	0.3	CLASS A AMPLIFIER	100 250	−3.0 min.	100 100	2.2 2.0	8.0 8.2	250000 800000	1500 1600	375 1280	—	—	6U7-G
							MIXER IN SUPERHETERODYNE	100 250	−10.0 −10.0	100 100	—	—	Oscillator Peak Volts = 7.0					
6V6	BEAM POWER AMPLIFIER	C2	7AC	H	6.3	0.45	SINGLE-TUBE CLASS A_1 AMPLIFIER	180 250	−8.5 −12.5	180 250	3.0 4.5	29.0 45.0	— —	— —	— —	5500 5000	2.00 4.25	6V6
							PUSH-PULL CLASS AB_1 AMPLIFIER	250 300	−15.0 −20.0	250 300	5.0♠ 5.0♠	70.0♠ 78.0♠	— —	— —	— —	10000 8000	8.5† 13.0†	
6V6-G	BEAM POWER AMPLIFIER	D10	G-7AC‡	H	6.3	0.45	AMPLIFIER	For other characteristics, refer to Type 6V6.										6V6-G
6W7-G	TRIPLE-GRID DETECTOR AMPLIFIER	D8	G-7R‡	H	6.3	0.15	CLASS A AMPLIFIER	250	−3.0	100	0.5	2.0	1500000	1225	1850	—	—	6W7-G
6X5	FULL-WAVE RECTIFIER	C2	6S	H	6.3	0.6		Maximum A-C Voltage per Plate.............350 Volts, RMS Maximum D-C Output Current .... 75 Milliamperes										6X5
6X5-G	FULL-WAVE RECTIFIER	D3	G-6S‡	H	6.3	0.6		For other ratings, refer to Type 6X5.										6X5-G
6Y6-G	BEAM POWER AMPLIFIER	D10	G-7AC‡	H	6.3	1.25	SINGLE-TUBE CLASS A_1 AMPLIFIER	135 200	−13.5 −14.0	135 135	3.0 2.2	58.0 60.0	—	—	— —	2000 2600	3.6 6.0	6Y6-G
6Z7-G	TWIN TRIODE AMPLIFIER	D3	G-8B‡	H	6.3	0.3	CLASS B AMPLIFIER	135 180	0 0	—	—	Power Output is for one tube at stated plate-to-plate load.				9000 12000	2.5 4.2	6Z7-G
6ZY5-G	FULL-WAVE RECTIFIER	D3	G-6S‡	H	6.3	0.3		Maximum A-C Voltage per Plate............ 350 Volts, RMS Maximum D-C Output Current ... 35 Milliamperes										6ZY5-G
10	POWER AMPLIFIER TRIODE	E4	4D	F	7.5	1.25	CLASS A AMPLIFIER	350 425	−32.0 −40.0	—	—	16.0 18.0	5150 5000	1550 1600	8.0 8.0	11000 10200	0.9 1.6	10
11 12	DETECTOR★ AMPLIFIER TRIODE	D2 D11	4F 4D	D.C. F	1.1	0.25	CLASS A AMPLIFIER	90 135	−4.5 −10.5	-	—	2.5 3.0	15500 15000	425 440	6.6 6.6	—	—	11 12
12A8-GT	PENTAGRID CONVERTER◘	C3	G-8A‡	H	12.6	0.15	CONVERTER	For other characteristics, refer to Type 6A8.										12A8-GT
12C8	DUPLEX-DIODE PENTODE	C1	8E	H	12.6	0.15	PENTODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6B8.										12C8
12K7-GT	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	C3	G-7R‡	H	12.6	0.15	AMPLIFIER	For other characteristics, refer to Type 6K7-GT.										12K7-GT
12Q7-GT	DUPLEX-DIODE HIGH-MU TRIODE	C3	G-7V‡	H	12.6	0.15	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6Q7-GT.										12Q7-GT
12SA7	PENTAGRID CONVERTER▲	B3	8R	H	12.6	0.15	MIXER	For other characteristics, refer to Type 6SA7.										12SA7
12SC7	TWIN TRIODE AMPLIFIER	B3	8S	H	12.6	0.15	AMPLIFIER	For other characteristics, refer to Type 6SC7.										12SC7
12SJ7	TRIPLE-GRID DETECTOR AMPLIFIER	B3	8N	H	12.6	0.15	AMPLIFIER	For other characteristics, refer to Type 6SJ7.										12SJ7
12SK7	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	B3	8N	H	12.6	0.15	AMPLIFIER	For other characteristics, refer to Type 6SK7.										12SK7
12SQ7	DUPLEX-DIODE HIGH-MU TRIODE	B3	8Q	H	12.6	0.15	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 6SQ7.										12SQ7
12Z3	HALF-WAVE RECTIFIER	D5	4G	H	12.6	0.3		Maximum A-C Plate Voltage .... 250 Volts, RMS Maximum D-C Output Current ..... 60 Milliamperes										12Z3
15	R-F AMPLIFIER PENTODE	D9	5F	D.C. H	2.0	0.22	CLASS A AMPLIFIER	67.5 135	−1.5 −1.5	67.5 67.5	0.3 0.3	1.85 1.85	630000 800000	710 750	450 600	—	—	15
19	TWIN TRIODE AMPLIFIER	D5	6C	D.C. F	2.0	0.26	AMPLIFIER	For other characteristics, refer to Type 1J6-G.										19
20	POWER AMPLIFIER TRIODE	D2	4D	D.C. F	3.3	0.132	CLASS A AMPLIFIER	90 135	−16.5 −22.5	—	—	3.0 6.5	8000 6300	415 525	3.3 3.3	9600 6500	0.045 0.110	20
22	R-F AMPLIFIER TETRODE	E1	4K	D.C. F	3.3	0.132	SCREEN-GRID R-F AMPLIFIER	135 135	−1.5 −1.5	45 67.5	0.6* 1.3*	1.7 3.7	725000 325000	375 500	270 160	—	—	22
24-A	R-F AMPLIFIER TETRODE	E1	5E	H	2.5	1.75	SCREEN-GRID R-F AMPLIFIER	180 250	−3.0 −3.0	90 90	1.7* 1.7*	4.0 4.0	400000 600000	1000 1050	400 630	—	—	24-A
							BIAS DETECTOR	250●	−5.0 approx.	20 to 45	—	Plate current to be adjusted to 0.1 milliampere with no signal.						
25A6	POWER AMPLIFIER PENTODE	C2	7S	H	25.0	0.3	CLASS A AMPLIFIER	95 180	−15.0 −20.0	95 135	4.0 7.5	20.0 38.0	45000 40000	2000 2500	90 100	4500 5000	0.9 2.75	25A6
25A6-G	POWER AMPLIFIER PENTODE	D10	G-7S‡	H	25.0	0.3	AMPLIFIER	For other characteristics, refer to Type 25A6.										25A6-G
25A7-G	RECTIFIER-PENTODE	D10	8F	H	25.0	0.3	PENTODE UNIT AS CLASS A AMPLIFIER	100	−15.0	100	4.0	20.5	50000	1800	90	4500	0.77	25A7-G
							HALF-WAVE RECTIFIER	Maximum A-C Voltage .... 125 Volts, RMS Maximum D-C Output Current .... 75 Milliamperes										
25B6-G	POWER AMPLIFIER PENTODE	D10	G-7S‡	H	25.0	0.3	CLASS A AMPLIFIER	95 135	−15.0 −22.0	95 135	1.5 2.5	41.0 61.0	— —	4600 5000	75 75	2000 1700	1.9 4.3	25B6-G
25L6	BEAM POWER AMPLIFIER	C2	7AC	H	25.0	0.3	SINGLE-TUBE CLASS A_1 AMPLIFIER	110 110	−7.5 −7.5	110 110	4.0 4.0	49.0 49.0	10000 10000	8200 8200	82 82	1500 2000	2.1 2.2	25L6
25L6-G	BEAM POWER AMPLIFIER	D10	G-7AC‡	H	25.0	0.3	AMPLIFIER	For other characteristics, refer to Type 25L6.										25L6-G
25L6-GT	BEAM POWER AMPLIFIER	C3	G-7AC‡	H	25.0	0.3	AMPLIFIER	For other characteristics, refer to Type 25L6.										25L6-GT
25Z5	RECTIFIER-DOUBLER	D5	6E	H	25.0	0.3	VOLTAGE DOUBLER	Maximum A-C Voltage per Plate .... 125 Volts, RMS Maximum D-C Output Current .... 100 Milliamperes										25Z5
							HALF-WAVE RECTIFIER	Maximum A-C Voltage per Plate♦ .... 250 Volts, RMS Maximum D-C Output Current per Plate .... 85 Milliamperes										
25Z6	RECTIFIER-DOUBLER	C2	7Q	H	25.0	0.3	VOLTAGE DOUBLER	Maximum A-C Voltage per Plate........ 125 Volts, RMS Maximum D-C Output Current .... 85 Milliamperes										25Z6
							HALF-WAVE RECTIFIER	Maximum A-C Voltage per Plate♦ .... 250 Volts, RMS Maximum D-C Output Current per Plate .... 85 Milliamperes										
25Z6-G	RECTIFIER-DOUBLER	D3	G-7Q‡	H	25.0	0.3	RECTIFIER-DOUBLER	For other ratings, refer to Type 25Z6.										25Z6-G
25Z6-GT	RECTIFIER-DOUBLER	C3	G-7Q‡	H	25.0	0.3	VOLTAGE DOUBLER	Maximum A-C Voltage per Plate .... 125 Volts, RMS Maximum D-C Output Current........ 85 Milliamperes										25Z6-GT
							HALF-WAVE RECTIFIER	Maximum A-C Voltage per Plate .... 125 Volts, RMS Maximum D-C Output Current per Plate .... 85 Milliamperes										
26	AMPLIFIER TRIODE	D12	4D	F	1.5	1.05	CLASS A AMPLIFIER	90 180	−7.0 −14.5	—	—	2.9 6.2	8900 7300	935 1150	8.3 8.3	—	—	26
27	DETECTOR★ AMPLIFIER TRIODE	D5	5A	H	2.5	1.75	CLASS A AMPLIFIER	135 250	−9.0 −21.0	—	—	4.5 5.2	9000 9250	1000 975	9.0 9.0	—	—	27
							BIAS DETECTOR	250	−30.0 approx.	—	—	Plate current to be adjusted to 0.2 milliampere with no signal.						
30	DETECTOR★ AMPLIFIER TRIODE	D5	4D	F	2.0	0.06	AMPLIFIER	For other characteristics, refer to Type 1H4-G.										30
31	POWER AMPLIFIER TRIODE	D5	4D	F	2.0	0.13	CLASS A AMPLIFIER	135 180	−22.5 −30.0	—	—	8.0 12.3	4100 3600	925 1050	3.8 3.8	7000 5700	0.185 0.375	31
32	R-F AMPLIFIER TETRODE	E1	4K	F	2.0	0.06	SCREEN-GRID R-F AMPLIFIER	135 180	−3.0 −3.0	67.5 67.5	0.4* 0.4*	1.7 1.7	950000 1200000	640 650	610 780	—	—	32
							BIAS DETECTOR	180♥	−6.0 approx.	67.5	—	Plate current to be adjusted to 0.2 milliampere with no signal.						
33	POWER AMPLIFIER PENTODE	D12	5K	F	2.0	0.26	CLASS A AMPLIFIER	180	−18.0	180	5.0	22.0	55000	1700	90	6000	1.4	33
34	SUPER-CONTROL R-F AMPLIFIER PENTODE	E1	4M	D.C. F	2.0	0.06	SCREEN-GRID R-F AMPLIFIER	135 180	−3.0 min.	67.5 67.5	1.0 1.0	2.8 2.8	600000 1000000	600 620	360 620	—	—	34
35	SUPER-CONTROL R-F AMPLIFIER TETRODE	E1	5E	H	2.5	1.75	SCREEN-GRID R-F AMPLIFIER	180 250	−3.0 min.	90 90	2.5* 2.5*	6.3 6.5	300000 400000	1020 1050	305 420	—	—	35
35L6-GT	BEAM POWER AMPLIFIER	C3	G-7AC‡	H	35.0	0.15	SINGLE-TUBE CLASS A AMPLIFIER	110	−7.5	110	3.0	40.0	13800	5800	80	2500	1.5	35L6-GT
35Z4-GT	HALF-WAVE RECTIFIER	C3	G-5AA	H	35.0	0.15		A-C Plate Voltage (Volts, RMS) D-C Output Current (Maximum Ma.)						125 100	250♦ 100			35Z4-GT

TYPE	NAME	DIMENSIONS SOCKET CONNECTIONS		CATHODE TYPE AND RATING			USE Values to right give operating conditions and characteristics for indicated typical use	PLATE SUPPLY VOLTS	GRID BIAS ■ VOLTS	SCREEN SUPPLY VOLTS	SCREEN CURRENT MA.	PLATE CURRENT MA.	A-C PLATE RESISTANCE OHMS	TRANSCONDUCTANCE (GRID-PLATE) μMHOS	AMPLIFICATION FACTOR	LOAD FOR STATED POWER OUTPUT OHMS	POWER OUTPUT WATTS	TYPE
		DIMEN.	S. C.	C. T.	VOLTS	AMP.												
36	R-F AMPLIFIER TETRODE	D9	5E	H	6.3	0.3	SCREEN-GRID R-F AMPLIFIER	100 250	− 1.5 − 3.0	55 90	— 1.7*	1.8 3.2	550000 550000	850 1080	470 595	—	—	36
							BIAS DETECTOR	100● 250●	− 5.0 − 8.0	55 90	—	Grid-bias values are approximate. Plate current to be adjusted to 0.1 milliampere with no signal.						
37	DETECTOR★ AMPLIFIER TRIODE	D5	5A	H	6.3	0.3	CLASS A AMPLIFIER	90 250	− 6.0 −18.0	—	—	2.5 7.5	11500 8400	800 1100	9.2 9.2	—	—	37
							BIAS DETECTOR	90 250	−10.0 −28.0	—	—	Grid-bias values are approximate. Plate current to be adjusted to 0.2 milliampere with no signal.						
38	POWER AMPLIFIER PENTODE	D9	5F	H	6.3	0.3	CLASS A AMPLIFIER	100 250	− 9.0 −25.0	100 250	1.2 3.8	7.0 22.0	140000 190000	875 1200	120 120	15000 10000	0.27 2.50	38
39/44	SUPER-CONTROL R-F AMPLIFIER PENTODE	D9	5F	H	6.3	0.3	CLASS A AMPLIFIER	90 250	{− 3.0 min.}	90 90	1.6 1.4	5.6 5.8	375000 1000000	960 1050	360 1050	—	—	39/44
40	VOLTAGE AMPLIFIER TRIODE	D12	4D	D.C. F	5.0	0.25	CLASS A AMPLIFIER	135✖ 180✖	− 1.5 − 3.0	—	—	0.2 0.2	150000 150000	200 200	30 30	—	—	40
41	POWER AMPLIFIER PENTODE	D5	6B	H	6.3	0.4	AMPLIFIER	For other characteristics, refer to Type 6K6-G.										41
42	POWER AMPLIFIER PENTODE	D12	6B	H	6.3	0.7	AMPLIFIER	For other characteristics, refer to Type 6F6.										42
43	POWER AMPLIFIER PENTODE	D12	6B	H	25.0	0.3	AMPLIFIER	For other characteristics, refer to Type 25A6.										43
45	POWER AMPLIFIER TRIODE	D12	4D	F	2.5	1.5	CLASS A AMPLIFIER	180 275	−31.5 −56.0	—	—	31.0 36.0	1650 1700	2125 2050	3.5 3.5	2700 4600	0.82 2.00	45
							PUSH-PULL CLASS AB_2 AMPLIFIER	275 275	Self-bias, 775 ohms♠ −68.0 volts, fixed bias			36.0♠ 28.0♠	—	—	—	5060 3200	12.0† 18.0†	
46	DUAL-GRID POWER AMPLIFIER	E3	5C	F	2.5	1.75	CLASS A AMPLIFIER□	250	−33.0	—	—	22.0	2380	2350	5.6	6400	1.25	46
							CLASS B AMPLIFIER◆	300 400	0 0	—	—	8.0♠ 12.0♠	—	—	—	5200 5800	16.0† 20.0†	
47	POWER AMPLIFIER PENTODE	E3	5B	F	2.5	1.75	CLASS A AMPLIFIER	250	−16.5	250	6.0	31.0	60000	2500	150	7000	2.7	47
48	POWER AMPLIFIER TETRODE	E3	6A	D.C. H	30.0	0.4	TETRODE CLASS A AMPLIFIER	96 125	−19.0 −20.0	96 100	9.0 9.5	52.0 56.0	— —	3800 3900	— —	1500 1500	2.0 2.5	48
							TETRODE PUSH-PULL CLASS A AMPLIFIER	125	−20.0	100	—	100.0♠	—	—	—	3000	5.0†	
49	DUAL-GRID POWER AMPLIFIER	D12	5C	D.C. F	2.0	0.12	CLASS A AMPLIFIER□	135	−20.0	—	—	6.0	4175	1125	4.7	11000	0.17	49
							CLASS B AMPLIFIER◆	180	0	—	—	4.0♠	—	—	—	12000	3.5†	
50	POWER AMPLIFIER TRIODE	F1	4D	F	7.5	1.25	CLASS A AMPLIFIER	300 400 450	−54.0 −70.0 −84.0	—	—	35.0 55.0 55.0	2000 1800 1800	1900 2100 2100	3.8 3.8 3.8	4600 3670 4350	1.6 3.4 4.6	50
53	TWIN TRIODE AMPLIFIER	D12	7B	H	2.5	2.0	AMPLIFIER	For other characteristics, refer to Type 6N7.										53
55	DUPLEX-DIODE TRIODE	D9	6G	H	2.5	1.0	TRIODE UNIT AS AMPLIFIER	For other characteristics, refer to Type 85.										55
56	SUPER-TRIODE AMPLIFIER DETECTOR★	D5	5A	H	2.5	1.0	AMPLIFIER DETECTOR	For other characteristics, refer to Type 76.										56
57	TRIPLE-GRID DETECTOR AMPLIFIER	D13	6F	H	2.5	1.0	AMPLIFIER DETECTOR	For other characteristics, refer to Type 6J7.										57
58	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D13	6F	H	2.5	1.0	AMPLIFIER MIXER◖	For other characteristics, refer to Type 6U7-G.										58
59	TRIPLE-GRID POWER AMPLIFIER	E3	7A	H	2.5	2.0	TRIODE ¶ CLASS A AMPLIFIER	250	−28.0	—	—	26.0	2300	2600	6.0	5000	1.25	59
							PENTODE•• CLASS A AMPLIFIER	250	−18.0	250	9.0	35.0	40000	2500	100	6000	3.0	
							TRIODE● CLASS B AMPLIFIER	300 400	0 0	—	—	20.0♠ 26.0♠	—	—	—	4600 6000	15.0† 20.0†	
71-A	POWER AMPLIFIER TRIODE	D12	4D	F	5.0	0.25	CLASS A AMPLIFIER	90 180	−19.0 −43.0	—	—	10.0 20.0	2170 1750	1400 1700	3.0 3.0	3000 4800	0.125 0.790	71-A
75	DUPLEX-DIODE HIGH-MU TRIODE	D9	6G	H	6.3	0.3	AMPLIFIER	For other characteristics, refer to Type 6SQ7.										75
76	SUPER-TRIODE AMPLIFIER DETECTOR★	D5	5A	H	6.3	0.3	CLASS A AMPLIFIER	100 250	− 5.0 −13.5	—	—	2.5 5.0	12000 9500	1150 1450	13.8 13.8	—	—	76
								90♥ 300♥	Self-bias, 6500 ohms. Self-bias, 6400 ohms.	Grid Resistor, ** 0.25 megohm.						Gain per stage = 9 Gain per stage = 10		
							BIAS DETECTOR	250	{−20.0 approx.}	—	—	Plate current to be adjusted to 0.2 milliampere with no signal.						
77	TRIPLE-GRID DETECTOR AMPLIFIER	D9	6F	H	6.3	0.3	CLASS A AMPLIFIER	100 250	− 1.5 − 3.0	60 100	0.4 0.5	1.7 2.3	650000 1500000	1100 1250	715 1500	—	—	77
							BIAS DETECTOR	250	− 1.95	50	Cathode current 0.65 ma.		—	Plate Resistor, 250000 ohms. Grid Resistor,** 250000 ohms.				
78	TRIPLE-GRID SUPER-CONTROL AMPLIFIER	D9	6F	H	6.3	0.3	AMPLIFIER MIXER	For other characteristics, refer to Type 6K7.										78
79	TWIN TRIODE AMPLIFIER	D9	6H	H	6.3	0.6	CLASS B AMPLIFIER	180 250	0 0	—	—	Power Output is for one tube at stated plate-to-plate load.				7000 14000	5.5 8.0	79
80	FULL-WAVE RECTIFIER	D12	4C	F	5.0	2.0	For other ratings, refer to Type 5Y4-G.											80
81	HALF-WAVE RECTIFIER	F1	4B	F	7.5	1.25	Maximum A-C Plate Voltage..........700 Volts, RMS Maximum D-C Output Current.......... 85 Milliamperes											81
82	FULL-WAVE▶ RECTIFIER	D12	4C	F	2.5	3.0	Maximum A-C Voltage per Plate......500 Volts, RMS Maximum D-C Output Current.........125 Milliamperes					Maximum Peak Inverse Voltage......1400 Volts Maximum Peak Plate Current.......... 400 Milliamperes						82
83	FULL-WAVE▶ RECTIFIER	E3	4C	F	5.0	3.0	Maximum A-C Voltage per Plate......500 Volts, RMS Maximum D-C Output Current.........250 Milliamperes					Maximum Peak Inverse Voltage......1400 Volts Maximum Peak Plate Current.......... 800 Milliamperes						83
83-V	FULL-WAVE RECTIFIER	D12	4L	H	5.0	2.0	For other ratings, refer to Type 5V4-G.											83-V
84/6Z4	FULL-WAVE RECTIFIER	D5	5D	H	6.3	0.5	Maximum A-C Voltage per Plate..........350 Volts, RMS Maximum D-C Output Current.......... 60 Milliamperes											84/6Z4
85	DUPLEX-DIODE TRIODE	D9	6G	H	6.3	0.3	TRIODE UNIT AS CLASS A AMPLIFIER	135 250	−10.5 −20.0	—	—	3.7 8.0	11000 7500	750 1100	8.3 8.3	25000 20000	0.075 0.350	85
89	TRIPLE-GRID POWER AMPLIFIER	D9	6F	H	6.3	0.4	AS TRIODE ¶ CLASS A AMPLIFIER	160 250	−20.0 −31.0	—	—	17.0 32.0	3300 2600	1425 1800	4.7 4.7	7000 5500	0.30 0.90	89
							AS PENTODE •• CLASS A AMPLIFIER	100 250	−10.0 −25.0	100 250	1.6 5.5	9.5 32.0	104000 70000	1200 1800	125 125	10700 6750	0.33 3.40	
							AS TRIODE ● CLASS B AMPLIFIER	180	0	—	—	6.0♠	—	—	—	13600 9400	2.50† 3.50†	
V-99 X-99	DETECTOR★ AMPLIFIER TRIODE	C4 D1	4E 4D	D.C. F	3.3	0.063	CLASS A AMPLIFIER	90	− 4.5	—	—	2.5	15500	425	6.6	—	—	V-99 X-99
112-A	DETECTOR★ AMPLIFIER TRIODE	D12	4D	D.C. F	5.0	0.25	CLASS A AMPLIFIER	90 180	− 4.5 −13.5	—	—	5.0 7.7	5400 4700	1575 1800	8.5 8.5	—	—	112-A
874	VOLTAGE REGULATOR	E4	4S	—	—	—	Minimum D-C Starting Supply Voltage.......125 Volts D-C Operating Voltage.......... 90 Volts					D-C Operating Current..........10-50 Ma. Maximum Current (Continuous)..........50 Ma.						874
876	CURRENT REGULATOR	G1	—	F	—	—	Voltage Range..........40 to 60 Volts					Operating Current..........1.7 Amperes						876
886	CURRENT REGULATOR	G1	—	F	—	—	Voltage Range..........40 to 60 Volts					Operating Current..........2.05 Amperes						886

★ For Grid-leak Detection—plate volts 45, grid return to + filament or to cathode.

■ Either A. C. or D. C. may be used on filament or heater, except as specifically noted. For use of D.C. on A-C filament types, decrease stated grid volts by ½ (approx.) of filament voltage.

◣ Supply voltage applied through 20000-ohm voltage-dropping resistor.

▶ Mercury-Vapor Type.

•• Grid #1 is control grid. Grid #2 is screen. Grid #3 tied to cathode.

¶ Grid #1 is control grid. Grids #2 and #3 tied to plate.

● Grids #1 and #2 connected together. Grid #3 tied to plate.

■ Grids #3 and #5 are screen. Grid #4 is signal-input control grid.

▲ Grids #2 and #4 are screen. Grid #1 is signal-input control grid.

** For grid of following tube.

° Both grids connected together; likewise, both plates.

† Power output is for two tubes at stated plate-to-plate load.

♠ For two tubes.

‡ This diagram is like the one having the same designation without the prefix G, except that Pin No. 1 has no connection.

◆ This diagram is like the one having the same designation without the prefix G, except that Pin No. 2 is omitted and Pin No. 1 has no connection.

♣ Obtained preferably by using 70000-ohm voltage-dropping resistor in series with a 90-volt supply.

‡‡ This diagram is like the one having the same designation without the prefix G, except that Pin No. 1 is connected to internal shield.

● Applied through plate resistor of 250000 ohms or 500-henry choke shunted by 0.25-megohm resistor.

♥ Applied through plate resistor of 100000 ohms.

✖ Applied through plate resistor of 250000 ohms.

● 50000 ohms.

⁄ Requires different socket from small 7-pin.

□ Grid #2 tied to plate. ◆ Grids #1 and #2 tied together.

♦ Plate voltages greater than 125 volts RMS require 100-ohm (minimum) series-plate resistor.

°° Applied through plate resistor of 150000 ohms.

◖ For signal-input control-grid (#1); control-grid #3 bias, −3 volts.

■ Applied through 200000-ohm plate resistor.

Note 1: Types with octal bases have *Miniature Metal Cap;* all others have *Small Metal Cap.*

Note 2: Subscript 1 on class of amplifier service (as AB_1) indicates that grid current does not flow during any part of input cycle.

Subscript 2 on class of amplifier service (as AB_2) indicates that grid current flows during some part of the input cycle.

▲ Grids #2 and #4 are screen. Grid #3 is signal-input control grid.

*Maximum.

§ Megohms.

KEY TO TUBE DIMENSIONS

Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter	Symbol	Maximum Overall Length x Diameter
A1	1 3/4″ x 1 5/16″	C3	3 5/[illegible]″ x 1 5/16″	D5	4 3/16″ x 1 9/16″	D11	4 11/16″ x 1 7/16″	E4	5 5/8″ x 2 3/16″
B1	2 5/8″ x 1 1/16″	C4	3 1/2″ x 1 1/16″	D6	4 5/16″ x 1 3/16″	D12	4 11/16″ x 1 13/16″	F1	6 1/4″ x 2 7/16″
B2	2 3/16″ x 1 3/16″	D1	4″ x 1 3/16″	D7	4 5/16″ x 1 5/8″	D13	4 13/16″ x 1 9/16″	G1	8″ x 2 1/16″
B3	2 5/8″ x 1 5/16″	D2	4 1/8″ x 1 3/16″	D8	4 15/32″ x 1 9/16″	E1	5 1/32″ x 1 13/16″		
C1	3 1/8″ x 1 5/16″	D3	4 1/8″ x 1 9/16″	D9	4 17/32″ x 1 9/16″	E2	5 5/16″ x 2 1/16″		
C2	3 1/4″ x 1 5/16″	D4	4 3/16″ x 1 3/16″	D10	4 5/8″ x 1 13/16″	E3	5 7/8″ x 2 1/16″		

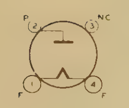
SOCKET CONNECTIONS

Bottom Views

KEY TO TERMINAL DESIGNATIONS OF SOCKETS

Alphabetical subscripts D, P, T, and HX indicate, respectively, diode unit, pentode unit, triode unit, and hexode unit in multi-unit types.

BP — Bayonet Pin
F — Filament
G — Grid
RC — Ray-Control Electrode
H — Heater
K — Cathode
NC — No Connection
P — Plate (Anode)
P_1 — Starter-Anode
P_{BF} — Beam-Forming Plates
S — Shell
TA — Target
● — Gas-Type Tube
U — Unit



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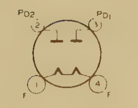

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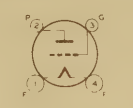

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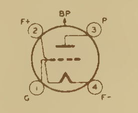

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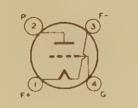

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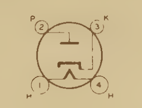

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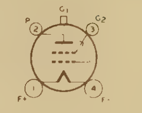

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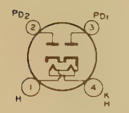

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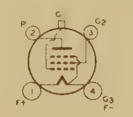

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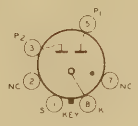

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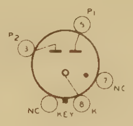

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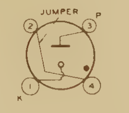

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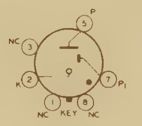

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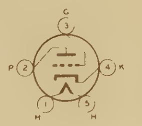

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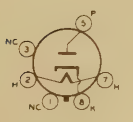

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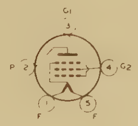

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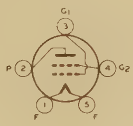

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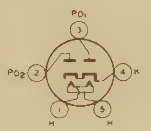

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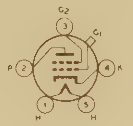

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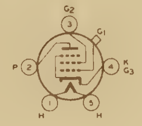

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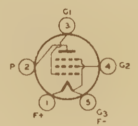

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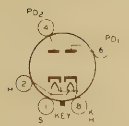

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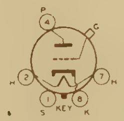

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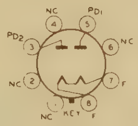

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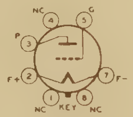

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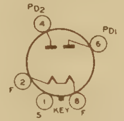

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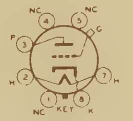

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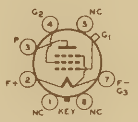

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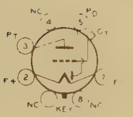

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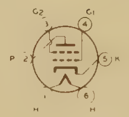

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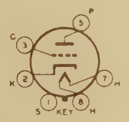

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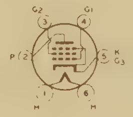

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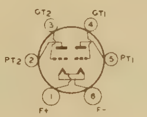

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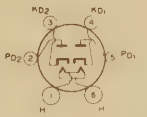

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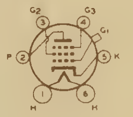

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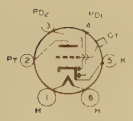

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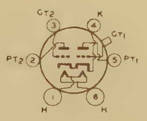

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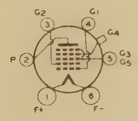

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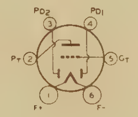

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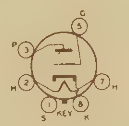

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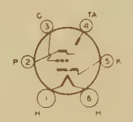

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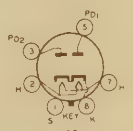

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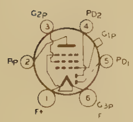

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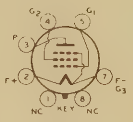

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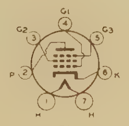

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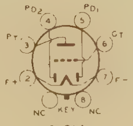

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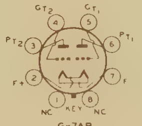

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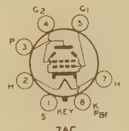

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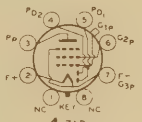

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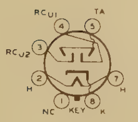

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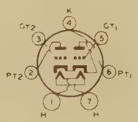

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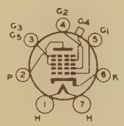

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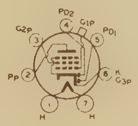

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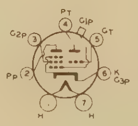

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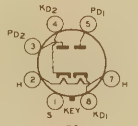

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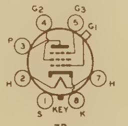

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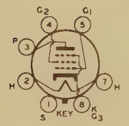

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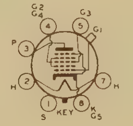

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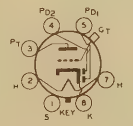

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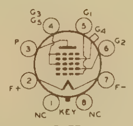

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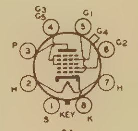

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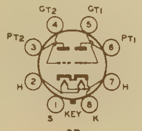

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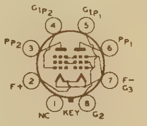

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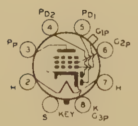

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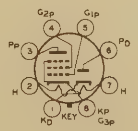

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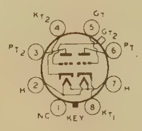

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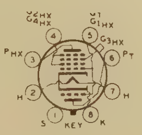

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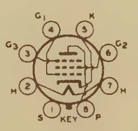

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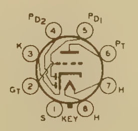

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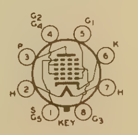

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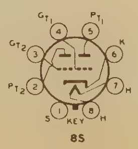


8S

INSTALLATION INSTRUCTIONS FOR THE

RCA VICTOR MASTER ANTENNA KIT

A good antenna installation is an essential factor in radio reception, and the development of the RCA Victor Master Antenna Kit is another step forward towards the perfecting of the radio reproduction of broadcast programs. Two supports, 42 feet or more apart to give an elevation to the antenna wires of at least 10 feet above a roof or 20 to 30 feet above the ground, are the necessary requirements for installing this aerial. It is effective in picking up communications at frequencies varying from 140 to 23,000 kilocycles or more, covering the bands listed as "X," "A," "B" and "C" in RCA publications. This means that reception is obtainable on the 49-, 31-, 25-, 19-, 16- and 13-meter international broadcasting bands as well as on the long and standard wave broadcast bands. A counterpoise wire is used to reduce interference on "X" and "A" bands.

This kit will only function properly to reduce noise on Standard Broadcasts when the instructions relating to the length of the counterpoise and transmission line and the spacing and placing of same are strictly followed.

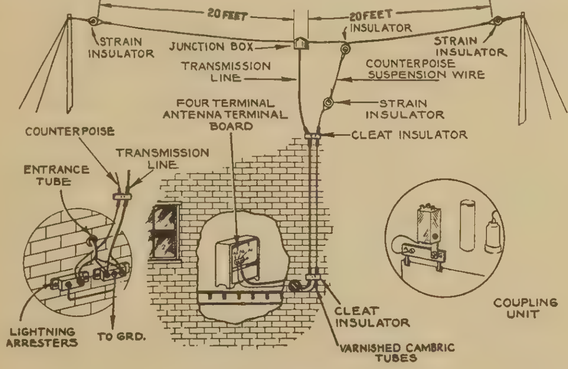


Figure 1

DESCRIPTION

The RCA Victor Master Antenna is supplied as two different kits.

1. **For specific use with and designed for a particular RCA Victor Radio Receiver.** The noise-reducing adjustment is on the receiver chassis and the Coupling Unit is not included in the kit. This kit is usually packed with the receiver.

2. For general use with RCA Victor Radio Receivers. In this form, Stock No. 9845, it is sold as a separate kit and includes the Coupling Unit with Noise-Reducing Adjustment.

The complete kit consists of the following parts:

1. **Antenna Assembly** comprising:

(a) Two Antenna Wire Coils, each 20 feet long, with a Strain Insulator attached at the free end of each wire and a suspension insulator in one wire, 12 inches from the Junction Box.

(b) Transmission Line Coil of special two-conductor insulated cable, 60 feet long.

(c) Counterpoise Wire Coil, 60 feet long, connected to insulator on one of the 20-foot antenna wires.

(d) Hermetically Sealed Junction Box to which the two antenna wires and the transmission line are connected.

2. **Two 2-Wire Nail-on Porcelain Cleat Insulators** for carrying transmission line and counterpoise on side of building or other supporting surface.

3. **Counterpoise Strain Insulator** attached to special instruction card for use in counterpoise suspension.

4. **Four Short Varnished Cambric Tubes** for holding the transmission line and counterpoise secure in the cleat insulators.

5. **Coupling Unit, Stock No. 9846,** for attachment to receivers not equipped with the special Master Antenna terminal board and noise-reducing adjustment.

Note.—This item is omitted from kits to be used with RCA Victor receivers specially designed to operate with this antenna system.

LOCATION

Preliminary to the installation, the location and direction of the antenna has to be decided upon. The following requirements must be given consideration in order to provide for best reception.

1. Antenna wires should have at least 10 feet (20 feet for good short wave reception) clear space above roof or other surface and from any metal parts of buildings or other objects. They should preferably be no less than 20 feet above the ground. This latter requirement refers to installations strung to buildings, trees or masts in the open.

2. The antenna should preferably not parallel or be near to trolley wires, main automobile highways, telephone lines, power lines, or other sources of electrical wave production. It is advisable to string the antenna at about the same height at each support.

3. A clear run of at least 42 feet between supporting points is required to allow for the strain wires and their attachment to rigid supports. Allowance must also be made for sag in the antenna wires. If pulled too tightly they are apt to break with the added strain due to snow, ice and wind in severe winter weather.

4. The path of the transmission and counterpoise lines should be planned with locations for the nail-on cleat insulators and the entrance into the building by means of a lead-in tube or otherwise.

INSTALLATION

The following steps are suggested as the simplest and best sequence for installation.

1. Lay out antenna in convenient proximity to supports. Remove shipping straps and unwind both coils, transmission line and counterpoise.

2. Check the approximate length of transmission line required from junction box to receiver and if necessary either cut to length or splice on an additional length of similar cable. This is obtainable from your dealer.

3. Lay the counterpoise wire alongside the prepared length of transmission line and either cut off to same length or splice on an additional piece to make both equal in length.

4. Remove the strain insulator from the instruction card and install in place in the counterpoise wire. The correct location in the wire is found by the following method (see Figure 2 c, d, e):

(a) Measure total length of transmission or counterpoise line "x" (see Fig. 2.). (Examples 40 feet, 60 feet, 80 feet.)

(b) Divide by two ("x/2." Examples 20 feet, 30 feet, 40 feet), and add 10 feet ("x/2 + 10." Examples 30 feet, 40 feet, 50 feet).

(c) Measure this distance along counterpoise from receiver end.

(d) Cut off counterpoise wire at this point. (See paragraph 5, *Note.*)

(e) Connect counterpoise strain insulator securely between ends at cut. Tie the end around the wire in a knot in each case. (See Fig. 2 e.)

Note.—The distance from the antenna wire to the counterpoise strain insulator in the three examples will be 10 feet, 20 feet, and 30 feet, respectively.

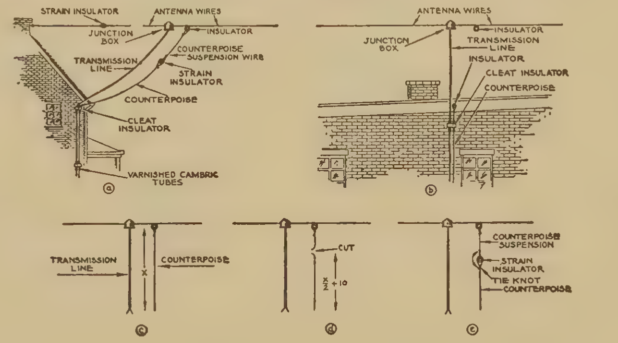


Figure 2

5. Decide on points at which the transmission and counterpoise wires will be attached to wall or other support with the cleat insulators.

Note.—In certain cases it may be found that the suspension section of the counterpoise wire between antenna wire and strain insulator is of such a length as to bring the strain insulator to the position of the highest cleat insulator. The counterpoise wire may be attached to the cleat insulator or a nail-on knob a little above it, and the counterpoise strain insulator and suspension part of counterpoise wire dispensed with altogether. See Figure 2 b.

6. Slide two varnished cambric tubes over transmission line and two over counterpoise.

7. **Suspension.**—Attach the suspension or strain wire or rope from one support to the strain insulator on the end of one of the 20-foot antenna wires and secure in place. No suspension or guy wire should exceeed 25 feet. If so, an additional strain insulator should be used to divide it into shorter sections.

8. String antenna in place to second support by means of rope and pulley or other means. Leave sufficient slack to prevent excessive strain in the antenna wire.

9. **Transmission Line and Counterpoise.**—Attach transmission line and counterpoise wire to wall or other exterior surface, with the cleat insulators, holding them securely with the cambric tubes, in such a manner as to avoid future damage to the insulation or to the lines from effects of swaying, wind and weather. Carry through wall and attach to receiver. The transmission line and counterpoise may be attached to interior walls with insulated staples or cleat insulators. They should be run in parallel paths two inches or more apart.

Note.—The transmission line and counterpoise wire may be spaced any distance from two inches to five feet apart. For short runs such as through partitions they may be close together. The installation should be such that they will be and remain two inches or more apart throughout practically their whole lengths. For a long span, where there is a sag in the wires, the counterpoise should be the lower and the transmission line pulled more tightly as shown in Figure 2a.

10. Strip the ends of the leads of the transmission line and attached to the A1 and A2 terminals on the antenna terminal board on the chassis of your receiver.

11. Strip the end of the counterpoise wire and attach to the A3 terminal on the antenna terminal board on the chassis of your receiver.

12. **Lightning Arrester.**—Where local ordinance requires, a lightning arrester may be installed on the outside wall at the point at which the transmission line enters the building. The two transmission line wires and counterpoise, stripped at entrance point, are to be connected as shown in Figure 1.

13. **For receivers that are not equipped with the special Master Antenna terminal board** a special transformer coupling unit (Stock No. 9846) is available from your dealer. This unit has three terminals on the upper side marked A and D for attachment of transmission line and B for counterpoise wire.

The pigtail and link terminals on the lower side are for attachment to the antenna and ground terminals respectively on your receiver chassis.

If your receiver has three terminals on the chassis A2, A1 and G, the A2 terminal will not be used.

The use of a ground connection to the ground terminal of your receiver is optional.

ADJUSTMENT

On your radio receiver with the Master terminal board there is a screw on the chassis usually behind the antenna terminal board and indicated in the instructions as a noise-reducing adjustment. This is an adjustment to balance out noise on standard broadcast reception (540 to 1,600 kc).

For receivers requiring the transformer coupling unit the adjusting screw is on the coupling unit.

After your RCA Victor receiver and RCA Victor Master Antenna are installed and in operation, set the tuning pointer at a point around 900 kc. Turn the volume control of your receiver fully on. If no local noise is heard start a domestic household appliance using a motor, such as a vacuum cleaner, electric refrigerator or electric razor. This may be in any part of the house, but should not be too close to the receiver. A continuous crackling, buzzing or clicking noise will be heard.

If noise interference is troublesome on any favorite station, turn to that station frequency.

Then proceed to adjust the noise-reduction trimmer screw by turning slowly with a screwdriver over its full travel until the point is found at which the interference noise is at a minimum. This adjustment functions only on standard broadcast and longer frequency ranges. ("A" and "X" bands.) The design and characteristics of the antenna are such that noise-reduction is automatic on short waves ("B" and "C" bands).

SERVICE

Although easy to install it may be preferable to have an experienced radio service engineer make the installation. A request to your dealer should be made, and he will take care of the complete installation at a nominal charge.

REPLACEMENT PARTS

Stock No.	Description	Price	Stock No.	Description
9816	Transmission Line—60 ft.	$1.50	9846	Coupling Unit.
31426	Counterpoise Wire—60 ft.	$1.35	12426	Strain Insulator.

INSTRUCTIONS
FOR
INSTALLING AND ADJUSTING
THE
RCA MULTI-RANGE WAVE TRAP
STOCK No. 33033

The RCA Multi-Range Wave Trap is designed for use on radio receivers operating in localities in which interference from strong, local broadcasting stations affects reception.

It consists of a magnetite tuned circuit covering a range from 450 to 2100 kilocycles and is adapted to a choice of one of several methods of connection for various frequency ranges, for matching different receiver input impedances, and for parallel-tuned or series-tuned arrangement. It has an average attenuation, on most receivers, of the order of 40:1. The circuit elements are completely shielded against interference pickup, and against reaction with other circuits of the receiver on which the wave trap is installed. A mounting bracket, for simplifying the installation, is attached to the wave trap.

Interference in Broadcast reception, for the remedying of which the Multi-Range Wave Trap is particularly adapted, may be detected in one or more of the following forms:

1—CODE—This interference is commonly experienced in the vicinity of strong coastal code communication stations. It is more likely and much more intense when such stations are operating within the receiver i-f range. Other code interference may be heard as a result of broad tuning from ships and communication stations operating at or near the low frequency end of the broadcast band. Second and third harmonics of these stations may also cause an interfering signal within the broadcast band.

2—BLANKETING Strong local stations will tend to blanket weaker and more distant desired stations due to broad tuning of certain receivers. The apparent selectivity of a receiver may be improved by using a wave trap to reduce the signal of the strong station and thereby permit reception from the weaker station.

3—CROSS MODULATION—Interference from another broadcast station heard only when tuned to a desired station is the result of spurious modulation within the receiver, and is caused by excessive strength of a nearby station.

4—IMAGE RESPONSE—This is noticeable as reception of a second station accompanied by the desired station, particularly when tuning-in at the low end of the broadcast band. On modern receivers, the undesired station is usually about 900-940 K.C. above the frequency of the desired station.

5—WHISTLES—A birdie or whistling effect as the receiver is tuned into or away from stations throughout the broadcast scale, indicates the combination of two or more strong local stations producing a spurious i-f signal which heterodynes with the normal i-f and causes interference. This condition results when the two stations differ in frequency by the amount of the i-f, or when their harmonics and/or fundamentals combine to produce the interfering frequency.

6—OVERLOADING—Excessively strong local stations will tend to overload certain receivers and cause a distorted tone. Reduction of signal input to the receiver by means of a wave trap will effect clear reception.

INSTALLATION
Mounting

The RCA Multi-Range Wave Trap, Stock No. 33033, should be mounted as near as possible to the antenna-ground terminals of the receiver so that connections will be short and direct. It is also essential that the case or shield of the trap be grounded, preferably directly to the chassis of the receiver. Several typical mounting methods are illustrated in Figure 1.

Connections

It is first necessary to identify the type and source of interference. This may be accomplished by listening carefully to the interference which is to be suppressed and often by investigating the probable source by means of reference to a complete list of stations operating in the immediate vicinity.

There are five fundamental schemes for connections as shown in Figure 2, the particular one to be used will depend upon the frequency of the interfering station and the type of receiver as related to input impedance.

Connections I, II, III, and IV, Figure 2, are especially adaptable to receivers having high impedance antenna input systems (2000 ohms or above). Such an input is generally comprised of a primary winding with approximately 200 to 300 turns and a D.C. resistance in excess of 10 ohms.

Connection V, Figure 2, is intended primarily for use on receivers having low impedance antenna input systems (approximately 500 ohms or less). Such an input is usually found on smaller receivers and is generally comprised of a primary winding with relatively few turns, and a D.C. resistance of less than 10 ohms.

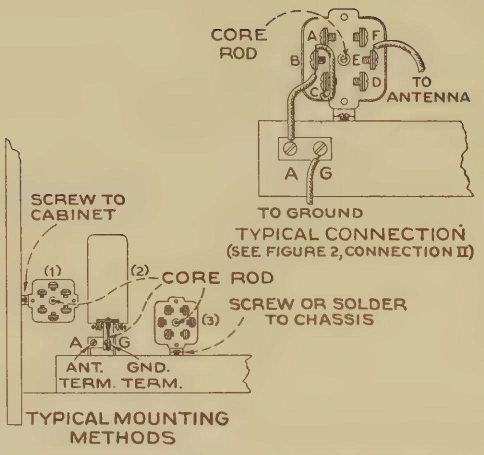


Figure 1—Installation of Wave Trap—showing different locations.

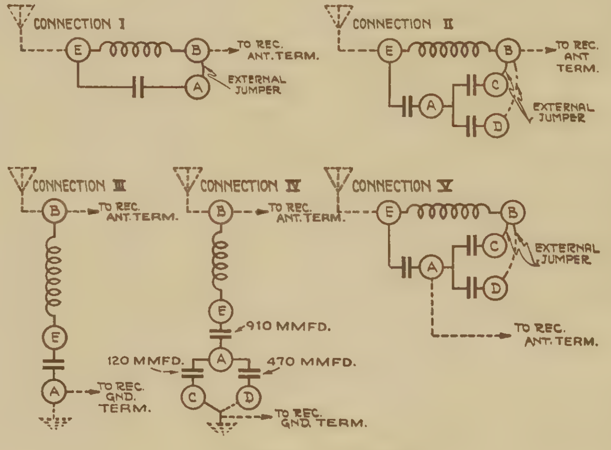


Figure 2—Diagrams of Connections.

Connection I—Range 450 K.C. to 760 K.C.

Remove antenna lead from receiver and connect to terminal "E" on wave trap. Install a short connector between wave trap terminal "B" and receiver antenna terminal (A). Interconnect wave trap terminals "A" and "B" with a jumper lead.

Connection II—Range 1275 K.C. to 2100 K.C. —"C" connected to "B".
—Range 760 K.C. to 1275 K.C. —"D" connected to "B".

Remove antenna lead from receiver and connect to terminal "E" on wave trap. Install a short connector between wave trap terminal "B" and receiver antenna terminal (A). Interconnect wave trap terminals "C" and "B" or "D" and "B" with a jumper lead to give the required range.

Connection III—Range 450 K.C. to 760 K.C.

Connect wave trap terminal "B" to the receiver antenna terminal (A), and wave trap terminal "A" to receiver ground terminal (G). Do not disturb normal antenna and ground connections on receiver.

Connection IV—Range 1275 K.C. to 2100 K.C. —"C" connected to ground (G).
—Range 760 K.C. to 1275 K.C. —"D" connected to ground (G).

Connect wave trap terminal "B" to the receiver antenna terminal (A), and wave trap terminal "C" or "D" to receiver ground terminal (G) as required to give the correct range. Do not disturb normal antenna and ground connections on receiver.

Connection V—Range 1275 K.C. to 2100 K.C. —"C" connected to "B".
—Range 760 K.C. to 1275 K.C. —"D" connected to "B".

Remove antenna lead from receiver and connect to terminal "E" on wave trap. Install a short connector between wave trap terminal "A" and receiver antenna terminal (A). Interconnect wave trap terminals "C" and "B" or "D" and "B" with a jumper lead to give the required range.

It is to be noted that external links are necessary for completing the circuit in certain applications. Usually there will not be more than two advisable methods to use for connections. Mount, connect and adjust the trap to your first best decision and then try out the alternative method. Use the better one of the two.

ADJUSTMENTS

After connecting the RCA Multi-Range Wave Trap, adjustment to the interfering station is made by turning the threaded core rod (see Figure 1) in and out with a small screw driver or an RCA Alignment Tool, Stock No. 31031, until the point is reached at which the maximum suppression of the signal is obtained. Turn the rod in for lower frequencies.

1. If the interfering station is within the tuning ranges of the receiver, *tune the receiver to the interfering station.* Then adjust the wave trap to reduce to a minimum.

2. If the interfering station is *not* within the tuning ranges of the receiver, set the receiver tuning to the point at which interference is most objectionable. Then adjust wave trap to reduce interference to a minimum.

3. If test apparatus is available, the best service method of adjustment which should be used in lieu of 1 or 2, is by means of a test oscillator such as RCA Stock No. 153. From the oscillator, supply a signal having the same frequency as the interfering station, and pick up signal on the receiver through the wave trap. Then adjust trap to reduce reception of signal to a minimum.

The adjustment should be made slowly and carefully and indications should be preferably by means of a visual meter connected across the receiver output or possibly by observation of the action of the receiver tuning indicator device. Listening to the output signal is not reliable owing to the effect of automatic volume control action, but if used, a short piece of wire connected temporarily as an antenna will facilitate adjustment by reducing the input from the signal.

SPECIAL APPLICATIONS

The RCA Multi-Range Wave Trap may be used to advantage on receivers installed with the RCA Master Antenna, the RCA Magic Wave Antenna, the RCA Spiderweb Antenna, the RCA No. 395 Antenna or other antenna with which a coupling unit is required.

With the Master Antenna installed, only connections III and IV (Figure 2) may be used, and whether the noise reduction device is part of the receiver or is in a separate coupling unit, the wave trap should parallel the noise reducing device. It may most easily be connected across the incoming leads by connecting "B" to one side of the transmission line and "A" (Connection III) or "C" or "D" (Connection IV) to the counterpoise lead.

Other types of antennas will require:

(a) Connections I, II or V to connect the wave trap between the antenna coupling unit and the receiver antenna terminal as a series connection.

(b) Connections III or IV to connect the wave trap to the receiver antenna and ground terminals to parallel the antenna coupling unit.

Printed in U. S. A.

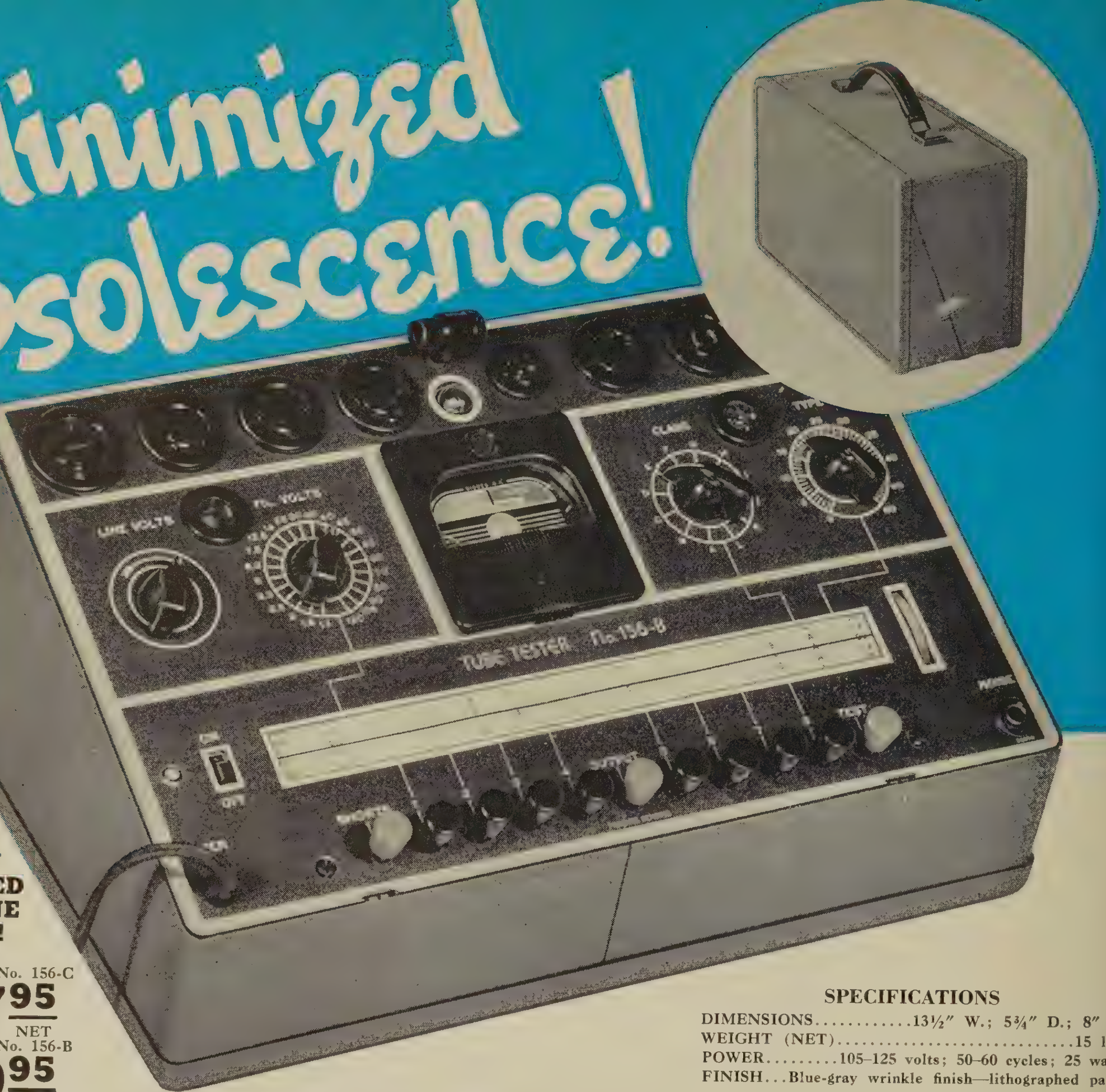
RCA

RADIO AND TELEVISION TEST EQUIPMENT

PARTS AND ACCESSORIES

CATALOG No. 104

Minimized Obsolescence!



EASILY OPERATED WITH ONE FINGER!

Counter type No. 156-C
$37.95 NET

Portable type No. 156-B
$39.95 NET

- 1. Operates with one finger. Buttons released or retained automatically.
- 2. Shows line voltage up to instant of actual test. Not necessary to set line voltage before inserting tube in socket.
- 3. Makes all tests according to RMA standards.
- 4. Tests Magic Eye Tubes for brilliance and opening and closing of eye.
- 5. Tests four-prong and octal-base ballast tubes for noisy welds and opens.
- 6. Tests voltage drop on all types of Gas Tubes, such as OA4-G, OZ4-G, 874, and others.
- 7. Tests every standard type of receiving tube, including ballast tubes, "Loktal" type and Bantam base.
- 8. Spare switch section and sockets minimize obsolescence.
- 9. Easily read figures on roll chart. Large type with guide lines indicate proper buttons to be pressed.
- 10. Line voltage adjustment for 100-125 volt line.
- 11. Pilot light indicates power "on" or "off."

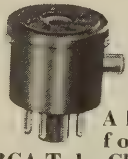
SPECIFICATIONS

DIMENSIONS............13½" W.; 5¾" D.; 8" H.
WEIGHT (NET)..............................15 lbs.
POWER.........105–125 volts; 50–60 cycles; 25 watts
FINISH...Blue-gray wrinkle finish—lithographed panel

RCA RADIO TUBE TESTER

The world's greatest radio engineering organization plus the world's largest manufacturer of radio tubes have combined to bring you a tube tester that is actually a long term investment—an instrument with features found in no other tube tester. The RCA Radio Tube Tester literally has everything—provisions for heaters up to 120 volts, two spare sockets, additional space on roller chart for 100 new tube types—everything has been provided to make it as nearly obsolescence proof as possible. Not only does it test practically every radio tube, but a socket has been included for checking miniature lamps (Xmas trees, flashlight bulbs, etc.). Built-in sockets provide for all "Loktal" type and Bantam base tubes. With all of these new features plus the basic easy-testing features that have made it the choice everywhere—the popular price of $37.95 has been retained. Check all the features of the RCA Radio Tube Tester and compare it with any other tester. See what a truly outstanding value it is.

ACCESSORIES FOR 156 AND 156A



"LOKTAL" TYPE ADAPTOR

A handy adaptor for use with RCA Tube Checkers, Types 156 and 156A. Makes testing "Loktal" type tubes easy. Complete test data is packed with each.

Stock No. 9863 NET **50c**

See page 19 for complete modernization kit.

"LOKTAL" TYPE SOCKET KIT

Bring your RCA Nos. 156 or 156A Checker up to date with this kit. Includes "Loktal" type socket (replaces spare tube socket), connecting wires and instructions.

Stock No. 9858 NET **50c**

RCA TELEVISION TEST EQUIPMENT

5-INCH TELEVISION OSCILLOGRAPH

This precision instrument has been designed for service work in accordance with present television receiver development plus anticipation of future television progress—thereby minimizing obsolescence. A special input cable having high input resistance and low capacity is provided. The 5-inch screen gives a large image of unusual clarity preferable for the finest work. All controls—including those for spot centering—are located on the front panel and are of the easily adjusted bar type. A special step-attenuator plus a fine gain control to cover between steps is provided to prevent changes in frequency characteristics at various input levels. Provision has been made for synchronization on positive or negative peaks, an important feature, for in certain television tests it is desirable to choose which is to be used. In television service this capable Oscillograph is ideal for viewing synchronizing and blanking impulses, horizontal and vertical saw-tooth waves, and grid and plate voltages on horizontal and vertical oscillators. It is easily portable and is styled in traditional RCA manner, with a finish that is both attractive and durable. 4 ft. low capacity (8 mmfd.) input cable included.

SPECIFICATIONS

DEFLECTION SENS. AT VERT. AMP. INPUT (max. gain)...0.040 V. RMS/inch (less cable)

DEFLECTION SENS. AT VERT. AMP. WITH CABLE...0.3 V. RMS/inch.

DEFLECTION SENS. HORIZ. AMP....0.56 V. RMS/inch.

FREQ. CHARACTERISTIC VERT. AMP. (max. gain)...5 cycles to 500 KC.

FREQ. CHARACTERISTIC HORIZ. AMP....5 cycles to 100 KC.

POWER...110–120 volts; 50–60 cycles; 55 watts

HORIZONTAL SWEEP FREQUENCY RANGE ...4 cycles to 22,000 cycles.

FINISH...Blue-gray baked wrinkle lacquer with streamlined snap-in handle.

SIZE...14¼″ x 8″ x 19¼″.

WEIGHT....30 lbs.

$\$147^{\underline{50}}$

Stock No. 158 NET

No. 158

TUBE COMPLEMENT

1 RCA 1802P-1; 1 RCA 1852; 1 RCA 879; 1 RCA 6C6; 1 RCA 6SJ7; 1 RCA 80; 1 RCA 884.

TELEVISION ALIGNMENT OSCILLATOR

This newly developed instrument is specifically designed for visual alignment of the r-f and i-f circuits in television receivers. When used with a cathode ray oscillograph (such as the RCA Stock No. 158) the selectivity curve of the circuits under test is produced on the television screen. Operation of the television alignment oscillator is surprisingly simple. There are four controls—all easily read and highly accurate—the power selector switch for selecting i-f or r-f operation; two range switches for selecting the desired i-f and r-f channels; and the phase control and switch for adjusting the oscillograph horizontal deflection to provide single image operation. The output frequency sweeps through the r-f and i-f bands at a rate of 60 times per second providing a steady, non-flickering pattern on the oscillograph screen. r-f and i-f coaxial transmission line with proper terminating loads included.

SPECIFICATIONS

OUTPUT SIGNALS...Output frequency sweeps through the following bands—RF-43-51 mcs., 49-57 mcs., 65-73 mcs., 77-85 mcs. and 83-91 mcs. IF-7.5 to 15 mcs. (Picture Channel), 7.75 to 8.75 mcs. Sound Channel).

OUTPUT VOLTAGES...2 values for each signal approximately 0.3 volts and 0.03 volts.

POWER SUPPLY...Self-contained for use on 110–120 volts, 60 cycles, 50 watts.

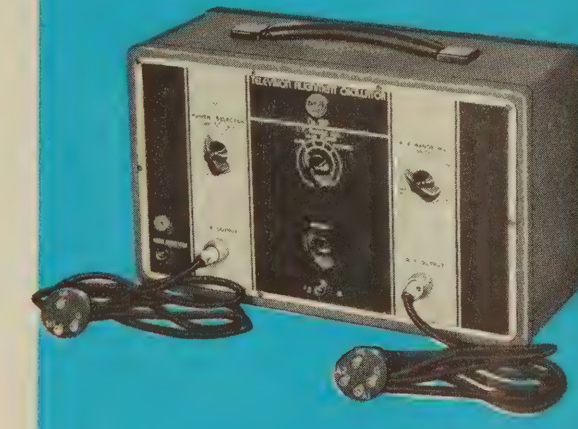
DIMENSIONS.......H. 9¼″ W. 13¾″, D. 6½″

WEIGHT....17 lbs.

FINISH . . . Baked lacquer — fine blue-gray wrinkle.

$\$130^{\underline{00}}$

Stock No. 159 NET



No. 159

TUBE COMPLEMENT

2 RCA 6J5; 2 RCA 1851; 1 RCA 6SK7; 1 RCA 5W4; 1 RCA VR-150-30.

No. 157

PIEZO ELECTRIC CALIBRATOR

The Stock No. 157 Piezo Electric Calibrator is a small crystal oscillator unit having fundamental frequencies at 250 KC and 2000 KC. Harmonics of these frequencies are such as to provide exact calibrating frequencies for use in all high frequency work including television service. This unit is complete with its own power supply and acorn type oscillator tube (RCA-955).

Selection of either fundamental frequency is obtained with a two-way switch. An output jack has been included for ease of connection.

SPECIFICATIONS

FUNDAMENTAL FREQUENCIES...250 and 2,000 KC.

ACCURACY.........................± .05%

TEMPERATURE COEFFICIENT...— 15 cycles per 1,000 KC per °C.

RADIOTRON............1 RCA-955 acorn type

POWER REQUIRED...110–120 volts; 50–60 cycles (A dc source 90–135 volts may be used for plate supply for unmodulated output).

POWER CONSUMPTION..............2 watts

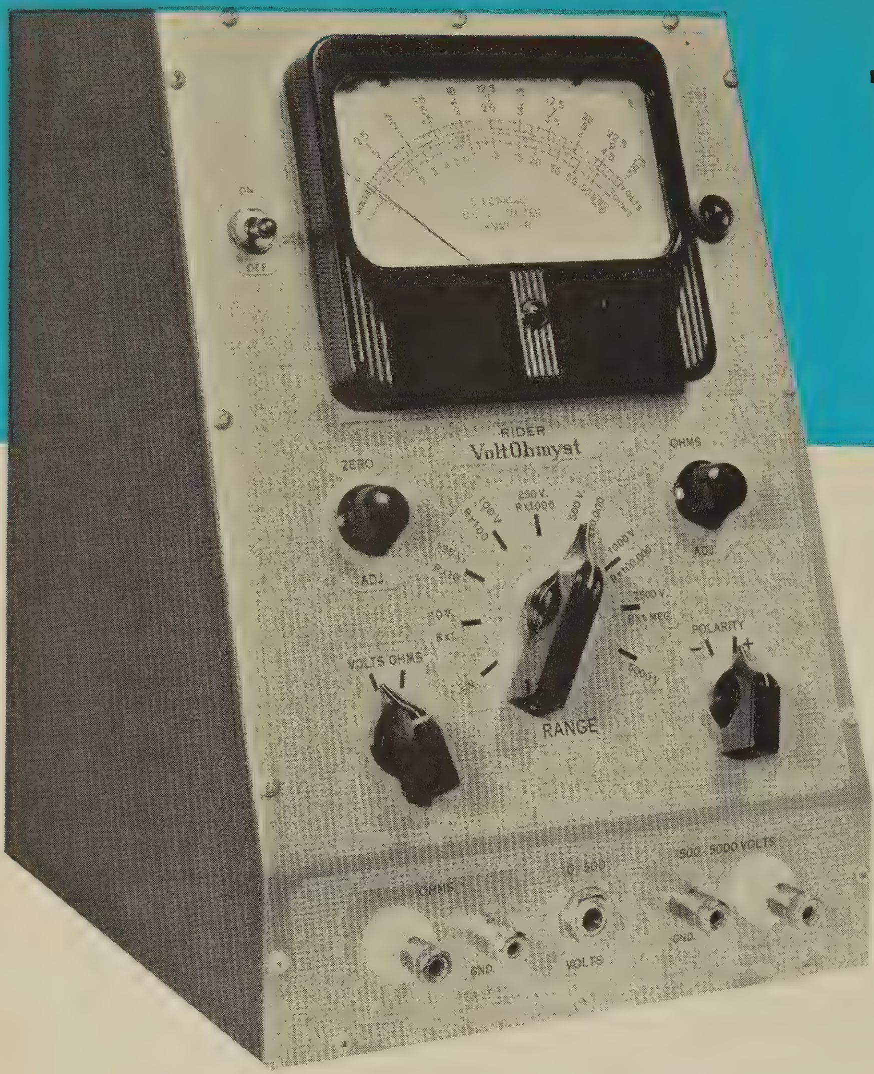
CONTROLS . . . Hi-Lo Frequency Switch.

SIZE...5½ x 2⅞ x 2⅝

WEIGHT....1 lb. 3 oz.

$\$46^{\underline{50}}$

Stock No. 157 NET



THE RIDER VOLTOHMYST

A NEW PUSH-PULL ELECTRONIC VOLT-METER—OHMMETER

.05—5,000 Volts D-C in 9 Ranges

0.1 ohm—1,000 Megohms in 7 Ranges

Net Price

$57 50

Stock No. 163

The Rider VoltOhmyst is a radically new Electronic d-c Voltmeter-Ohmmeter with extremely wide ranges. 10 billion to one is the ratio of its resistance range! This is wide enough to take care of the servicing and engineering requirements of today and tomorrow. It is designed for use on Television, radio receivers, transmitters, aircraft radio, power, sound, facsimile and other similar types of engineering work.

With it you can measure with speed and accuracy d-c voltage in high resistance photo-cell circuits, television circuits, bias cells, operating voltages across tuned circuits with the signal present. In every case it is the actual operating voltage that is measured, since there is no circuit loading. Its input resistance of 160,000,000 ohms on all ranges between 500 volts and 5,000 volts makes this a universal instrument, truly minimizing obsolescence.

The Rider VoltOhmyst measures 0.05 to 5,000 volts d-c—0.1 ohm to 1,000,000,000 ohms with a greater convenience than any other existing instrument. The VoltOhmyst has one scale—one zero adjustment. You just put the proper probe on the point to be measured and the scale shows the voltage or resistance without any adjustments.

The Rider VoltOhmyst is accurate—3% accuracy on the Ohmmeter, 2% on the Voltmeter. The input resistance of the Voltmeter is 16,000,000 ohms up to 500 volts and 160,000,000 ohms from 500 to 5,000 volts.

SPECIFICATIONS

VOLTMETER

RANGES...Nine ranges, 0-5, 10, 25, 100, 250, 500, 1,000, 2,500 and 5,000 volts.

INPUT RESISTANCE...16,000,000 ohms on 5, 10, 25, 100, 250 and 500 volt ranges. 160,000,000 ohms on 1,000, 2,500 and 5,000 volt ranges.

ACCURACY..............................2% of full scale

OHMMETER

RANGES...Seven decade ranges measuring from 0.1 ohm to 1,000,000,000 ohms; 10 ohms center scale on lowest range, 10 megohms center scale on highest range; logarithmic spread over 80% of scale.

ACCURACY............................3% at center scale

OTHER FEATURES

METER...Rugged, high torque movement; heavy alnico magnet providing high flux density; silver-etched dial; 4″ scale.

TERMINALS...Heavy brass, nickel-plated; accommodate banana plugs, phone tips and wire leads.

TEST LEADS...Two leads, 48″ long; special "signal circuit" voltmeter cable equipped with isolating resistor built into bakelite probe sleeve; ground lead with alligator clip.

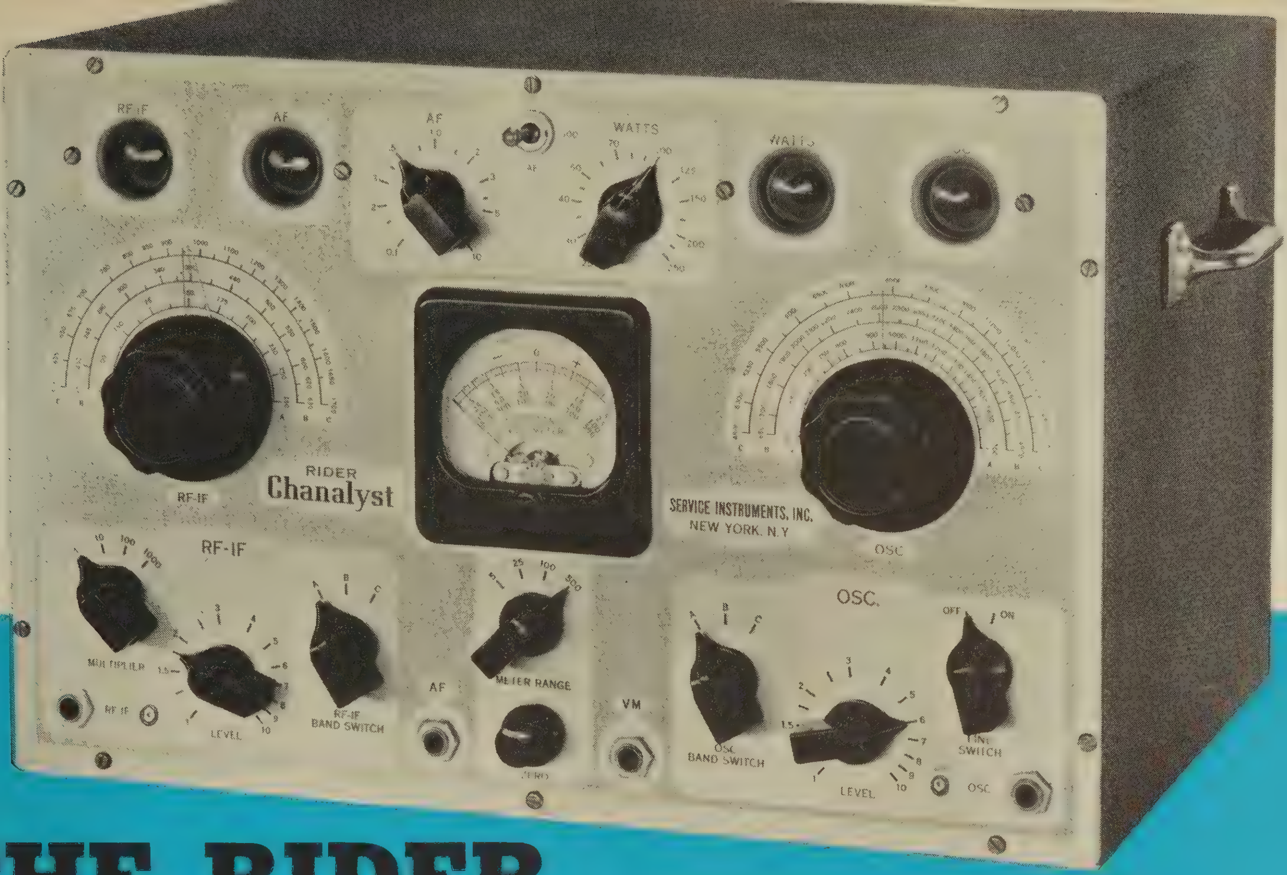
CABINET...Welded steel case, sloping front; crystalline gray finish.

DIMENSIONS......Base—7½″ wide x 8¼″ deep; height—11″

WEIGHT..14 lbs.

TUBES.............2 RCA-6K6G and 1 RCA-6X5G, total 3

POWER SUPPLY...25-60 cycles, 105-130 volts; power consumption 12 watts.



THE RIDER CHANALYST

ELIMINATES GUESSWORK . . . PUTS EXTRA HOURS IN YOUR SERVICE DAY . . . MEANS MORE PROFIT FOR YOU

Net Price
$107.50
Stock No. 162

The Rider Chanalyst is the first test instrument offered to servicemen which gives true dynamic and functional testing of a radio receiver. Because its fundamental basis of operation is the *signal*, this means it may be used equally well with any receiver—old ones, new ones, or those of tomorrow. The Chanalyst tests each circuit—each tube while the receiver is operating—all without interfering with the performance of the receiver. This is True Dynamic Testing!

THE CHANALYST ELIMINATES GUESSWORK

. . . because it will trace the signal from antenna to loudspeaker or pick it up at any point between, will lead you directly to any source of trouble and correctly establish its character. The Chanalyst is quick—it's sure—it's dependable.

THE CHANALYST PUTS EXTRA HOURS IN YOUR SERVICE DAY

. . . by solving the most difficult problem in record time. With it, the need for spending many hours locating trouble in an inoperative receiver is removed. It quickly localizes noise and distortion. The Chanalyst quickly solves intermittent problems—it takes them right in stride. You'll be able to do more work in one day than you ever thought possible.

THE CHANALYST MEANS MORE PROFIT FOR YOU

. . . because customers will react favorably to the speedy and dependable service you can offer them. You'll get repeat jobs. You'll get new jobs. You can spend some of those extra hours in your service day in planning new sales promotions; in making your shop more attractive. All of these activities will result in greater profits.
Ask for a demonstration of the Chanalyst. Convince yourself it's today's best service instrument.

SPECIFICATIONS

RF-IF CHANNEL	
Frequency Range	95 kc. to 1700 kc.
Frequency Calibration	± 2%
Sensitivity (to close eye)	50 micro-volts (approx.)
OSCILLATOR CHANNEL	
Frequency Range	600 kc. to 15,000 kc.
Frequency Calibration	± 2%
AUDIO FREQUENCY CHANNEL	
Frequency Range	150 cycles to 150,000 cycles
Sensitivity	0.15 volt (approx.)
ELECTRONIC VOLTMETER CHANNEL	
Voltage Ranges	−5 to +5 −25 to +25 −100 to +100 −500 to +500
Input Impedance	10,000,000 ohms
WATTAGE INDICATOR CHANNEL	
Output Indicator	Magic Eye Tube
Input Range	25 watts to 250 watts
Accuracy	± 10% (assuming 80% power factor of load).

POWER SUPPLY...105 volts to 125 volts, 50–60 cycles, 60 watts.

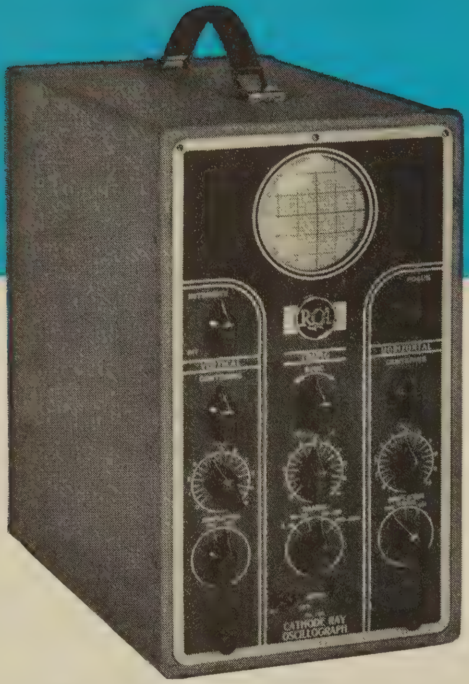
TUBE COMPLEMENT...3 RCA-6K7, 1 RCA-6H6, 4 RCA-6E5, 1 RCA-1852, 1 RCA-76, 1 RCA-6X5G, 1 RCA-6Q7.

SIZE	10¾" x 16" x 9"
SHIPPING WEIGHT	28 lbs.

	Net Price
Stock No. 162A. 105-125 volts, 25-40 cycle operation.	**$112.50**
Stock No. 9897. Rack Panel Mounting and Accessories for Nos. 162 and 162-A.	**$15.00**

RCA OSCILLOGRAPHS

3-INCH CATHODE RAY OSCILLOGRAPH



Net Price

$63.95

Stock No. 155

Stock No. 9640. Same as 9545 (earlier model) but for 25 cycle operation.

NET **$68.95**

The RCA 3-inch Cathode Ray Oscillograph is ideal for the vast majority of service applications. The image is quite large while the controls are simple and easy to operate. All controls, including the spot centering controls, are located on the front panel. Greater portability is achieved through reduced size and weight. Attractive styling, more flexible electrical design and better performance make this instrument unusually attractive. Check the specifications below and see the outstanding value RCA offers in this Oscillograph. Uses improved high-sensitivity Cathode Ray Tube with Aquadag tube coating.

SPECIFICATIONS

RADIOTRONS...1 RCA-906 (improved type), 2 RCA-6C6, 2 RCA-80, 1 RCA-884—Total 6.

SENSITIVITY...Without amplifier — 20 volts (RMS) per inch deflection. With amplifier—0.5 volt (RMS) per inch deflection.

AMPLIFIER: RESPONSE...Flat, 20-90,000 cycles—Gain 40.

TIMING AXIS.................15-22,000 cycles

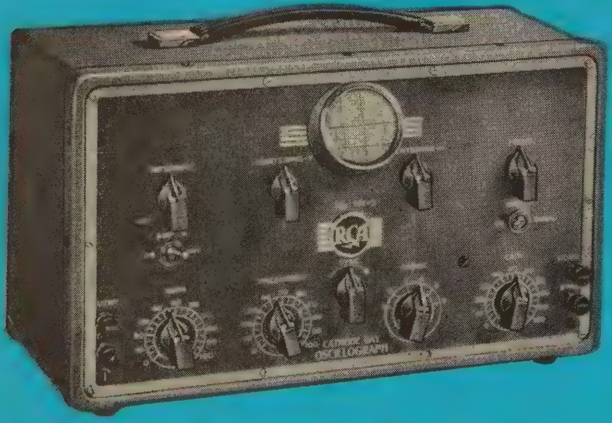
CONTROLS...Front panel for all operations, including panel centering.

POWER SUPPLY.........110 volts, 50-60 cycles

INPUT POWER.......................50 watts

DIMENSIONS...Height 15″, width 8″, depth 14″. Weight 21 lbs.

FINISH...Blue-gray baked wrinkle lacquer with streamlined handle. Copper plating on chassis and inside of panel and cabinet.



2-Inch Cathode Ray Oscillograph

An easily read, tilt mounted screen is an important feature of this popular-priced RCA Cathode Ray Oscillograph. Using the RCA-902 2-inch tube, this unit provides every important feature needed in a modern Cathode Ray Oscillograph. All controls, including centering controls, are located on the front panel for handy operation. High gain amplifiers for both vertical and horizontal deflection insure high sensitivity—0.5 volts (RMS) per inch of deflection.

SPECIFICATIONS

RADIOTRONS...1 RCA-902 (2-inch), 1 RCA-885, 2 RCA-6C6, 1 RCA-80—Total 5.

SENSITIVITY.........0.5 volts (RMS) for full-scale deflection (with amplifier)

AMPLIFIER RANGE AND GAIN...............Flat 20-15,000 cycles, gain 50

TIMING AXIS (Horizontal Sweep)...........................30-10,000 cycles

OPERATION...All controls on front panel—complete with calibration screen.

POWER.........110-120 volts; 50-60 cycles; 30 watts

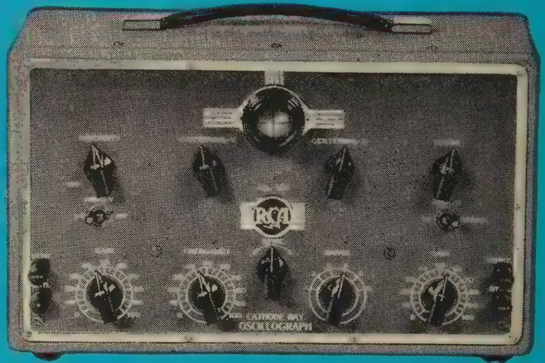
DIMENSIONS...Length 13¾″, height 9¼″, depth 7¾″. Weight 14½ lbs.—Special snap handle—sturdy case.

FINISH...Gray wrinkle lacquer with nickel trimming. Reversed etched nickel-silver panel—large, soft rubber feet.

Net Price

$49.95

Stock No. 151-2



1-Inch Cathode Ray Oscillograph

For the service engineer who desires the latest in test equipment at a minimum cash outlay, the RCA-151 Oscillograph is to be recommended. Check the specifications and see what outstanding performance the Model 151 offers to the progressive service engineer. In addition to radio servicing, this is a general purpose oscillograph, finding many invaluable applications in radio transmitter, sound equipment, industrial, and educational fields.

SPECIFICATIONS

RADIOTRONS...1 RCA-913, 1 RCA-885, 2 RCA-6C6, 1 RCA-80, Total 5.

SENSITIVITY...1.75 volts (RMS) for full scale deflection.

AMPLIFIER...........Flat 20-15,000 cycles, gain 50

TIMING AXIS.......................30-10,000 cycles

POWER SUPPLY.............110 volts, 50-60 cycles

INPUT POWER.............................30 watts

DIMENSIONS...Length 13¾″, height 9¼″, depth 7¾″. Weight 14½ lbs.

FINISH...Gray wrinkle lacquer with nickel trimming. Reversed etched nickel-silver panel, snap handle and large soft rubber feet.

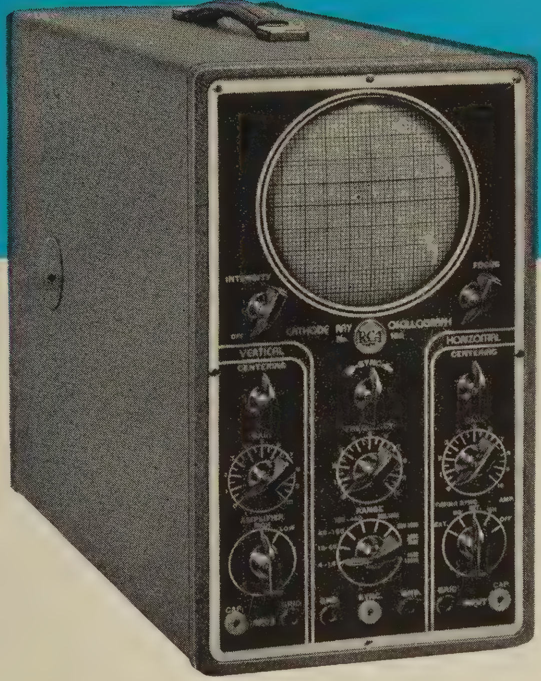
Net Price

$39.95

Stock No. 151

Stock No. 151-A for 25-cycle operation. NET **$44.95**

RCA
5″ GENERAL PURPOSE OSCILLOGRAPH



This fine portable instrument embodies all of RCA's skill and experience in oscillograph manufacture. Not only will it perform all the functions of other RCA Oscillographs (except the Television model) but it may be used for engine pressure measurements and similar applications. The amplifiers have unusually wide ranges; the 5″ screen gives an easily read image and all controls are conveniently located on the front panel. Its compact construction provides easy portability—weighs only 30 pounds. Attractively styled in typical RCA manner. Check the specifications of this fine new instrument and see what unusual value the RCA No. 160 Oscillograph offers.

Net Price

\$130^{00}

Stock No. 160

TUBE COMPLEMENT

1 RCA 879; 1 RCA 80; 1 RCA 1802-P-1; 1 RCA 884; 3 RCA 6C6.

SPECIFICATIONS

DEFLECTION SENS. AT VERT. AMP. INPUT (gain max.)	.013 V RMS per inch
DEFLECTION SENS. HORIZ. AMP.	0.56 V RMS per inch
INPUT AT VERT. AMP. INPUT	500,000 ohms
INPUT HORIZ. AMP.	500,000 ohms, 15 mmf.
FREQ. CHARACTERISTIC VERT. AMP. (gain max.)	3 cycles—50 kc. essentially flat
FREQ. CHARACTERISTIC HORIZ. AMP.	5 cycles—100 kc. essentially flat
MAX. SIGNAL INPUT TO VERT. AMP.	500 volts RMS
MAX. SIGNAL INPUT TO HORIZ. AMP.	500 volts RMS
HORIZONTAL SWEEP VOLTAGE	4 cycles to 22,000 cycles
POWER	105–125 volts; 50–60 cycles; 55 watts
FINISH	Blue-gray baked wrinkle finish
SIZE	14¼″ H.; 8″ W.; 19¼″ D.

PIEZO-ELECTRIC CALIBRATOR

An instrument that gives you laboratory calibrating accuracy for checking oscillators, alignment points and many other frequencies used in radio service work. Contains a special crystal having frequency modes at 100 kc, and 1,000 kc. Complete with power supply and acorn type oscillator tube (RCA-955). Checks frequencies from 100 kc. to 20,000 kc. in 100 kc. steps and 1,000 kc. to 50,000 kc. in 1,000 kc. steps. The guaranteed accuracy is 0.05 per cent of 100 kc. and 1,000 kc.

SPECIFICATIONS

FUNDAMENTAL FREQUENCIES ...100 kc. and 1,000 kc.

ACCURACY OF CALIBRATION ...2 parts in 1 million.

TEMPERATURE COEFFICIENT ...20 cycles per 1,000 kc. per °C.

POWER REQUIRED...110-120 volt, 50-60 cycle A.C. (90-135 volt d-c plate supply may be connected externally for unmodulated operation if desired.)

POWER CONSUMPTION...2 watts

CONTROLS . . . "Hi-Lo" Toggle switch.

SIZE...5½″ x 2⅞″ x 2⅝″. Weight, 1 lb., 3 oz.

\$29^{95}

Stock No. 9572 NET

OUTPUT INDICATOR

This is a "burn-out proof" instrument that serves as an excellent indicating device for aligning receivers. You see the actual amount of light that the voice current produces. Merely align your trimmer for the greatest brilliancy of the neon lamp. Works with any dynamic loudspeaker. Consists of a tapped step-up transformer, a potentiometer, a glow tube and three binding posts for connecting the output of the receiver to the transformer—all mounted in a die-cast bakelite case.

SPECIFICATIONS

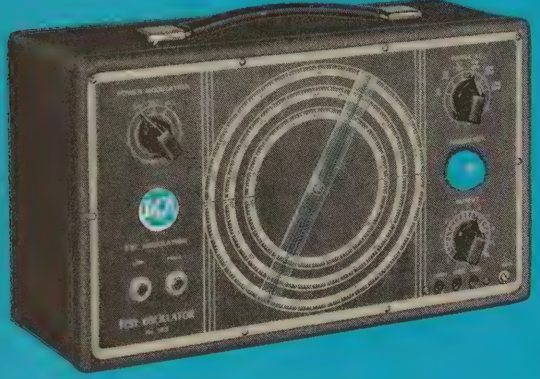
SIZE..........5⅜″ x 2⅞″ x 2⅝″. Weight, 12 oz.
LAMP RATING............50-60 volts breakdown
TRANSFORMER RATIO........80:1 (Maximum)
INPUT IMPEDANCES...0 to H, 4 ohms; 0 to L. 1½ ohms; H to L, 0.6 ohm.

\$4^{00}

Stock No. 4317 NET

RCA

TEST OSCILLATORS



No. 153

A-C OPERATED TEST OSCILLATOR

Again RCA sets the pace in test oscillators for servicing the most complex of receivers. With this fine instrument, you are ready to offer your customers a service that is impossible with less modern instruments. The 6″ giant dial, over 50″ in length,—insures an easily read setting, the high frequency range alone covering 10 inches. RCA all-metal tubes give stability to circuit design and eliminate the need for tube shielding. Complete a-c operation and fuse protection are other important features.

SPECIFICATIONS

VOLTAGE....................110-120 volts

FREQUENCY...................50-60 cycles

POWER CONSUMPTION...........30 watts

FUSE PROTECTION..............1 Ampere

R-F FREQUENCY RANGE (6 bands—Fundamental Frequency)...........100-30,000 kc.

AUDIO MODULATION FREQUENCY (8 volts available for testing).........400 cycles

R-F OUTPUT
- Low..........0.01 volts max.
- Medium......0.25 volts max.
- High.........1.0 volts max.
- Minimum.....2 Microvolts

OUTPUT IMPEDANCES..10, 750, and 4,000 ohms.

TUBES...RCA-5W4 Rectifier, RCA-6C5 Audio Oscillator, RCA-6J7 R-F Oscillator.

CALIBRATION ACCURACY............2%

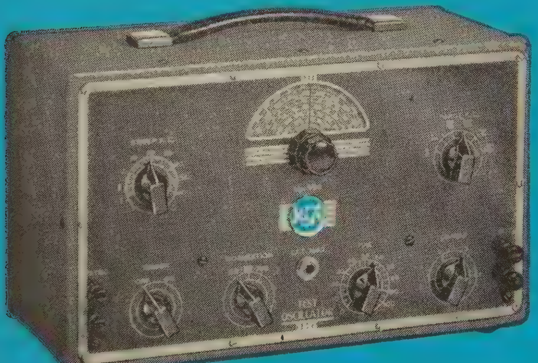
FREQUENCY MODULATOR JACK...Provided for use with Sweep Condenser for visual I. F. alignment.

DIMENSIONS...13¾″ x 9¼″ x 6½″. Weight, 12½ lbs.

FINISH . . . Blue-Gray wrinkle lacquer with lithographed panel. Special Snap Handle—large, soft rubber feet.

$\$29^{95}$

Stock No. 153 NET



No. 150

ELECTRONIC SWEEP TEST OSCILLATOR

This fine oscillator not only offers every important feature for servicing all radio receivers, but has the additional highly desirable quality of having its own internal frequency modulator for visual oscillographic alignment. This feature permits you to visually align receivers with any oscillograph, or alone, you may use it with an output indicator or meter. For those who desire the finest in test oscillator equipment, this unit is to be recommended.

SPECIFICATIONS

FREQUENCY RANGE...90-32,000 kcs.; fundamental frequency, 6 ranges—no harmonics.

RADIOTRONS...RCA-6A7, Variable Frequency Oscillator and Mixer, RCA-6F7, Fixed Frequency Oscillator and 400 cycle Oscillator, 2 RCA-6C6, Sweep Generator, RCA-80, Rectifier.

MODULATION...Amplitude, 400 cycles 30%. Frequency, 120 times per second, adjustable from 1 to 40 kcs. at any output frequency—calibrated control.

DIAL—4 inches...Direct reading, indirect illumination, no parallax, direct drive and 5:1, 4″ diameter, calibration accuracy 1%. Scale length, 45 inches.

OUTPUT VOLTAGE...0.25 volts maximum at all frequencies—negligible leakage.

OUTPUT CONTROL...Three-step attenuator plus continuously variable control.

POWER...110–120 volts, 50–60 cycles; 30 watts.

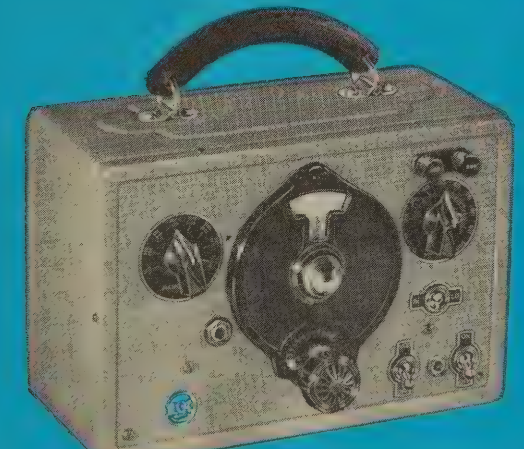
DIMENSIONS...Length, 13¾″; height, 9¼″; depth, 7½″; weight, 17 lbs. Special snap handle—sturdy case.

FINISH . . . Gray wrinkle lacquer with nickel trimming. Reversed etched, nickel-silver panel — large, soft rubber feet.

$\$64^{50}$

Stock No. 150 NET

Stock No. 150A (for 25 cycle operation) **$72.50** NET



No. 9595

BATTERY POWERED OSCILLATOR

Service engineers desiring a highly portable accurate test oscillator will find this unit entirely satisfactory. It is extremely small in size, and weighs only 5 lbs. It is ideally suited for testing automobile and battery receivers at locations where A-C is not available in addition to its regular use with A-C receivers. Internal 400 cycle modulation is provided together with a panel jack for the application of external modulating voltage such as from a Beat Frequency Oscillator. Also, oscillograph operation is provided by a jack connected across the tuning capacitor for use with an external frequency modulator.

SPECIFICATIONS

FREQUENCY RANGE...90 kc. to 25,000 kc. (8 bands). L

R-F OUTPUT VOLTAGE...2 position switch with variable attenuator. Gives control of output voltage from 1 microvolt to 0.2 volts, up to 1,500 kc. Maximum from 1,500 to 25,000 kc., 0.1 volts with somewhat greater minimum.

CALIBRATION ACCURACY...plus and minus 3%.

TUBES...2 RCA-30, 1 R-F Oscillator and 1 A-F Oscillator.

SIZE.......6½″ x 9¾″ x 4½″. Weight, 5 lbs.

FINISH . . . attractive gray wrinkle lacquer with red RCA monogram. Reversed etched dials.

$\$34^{50}$

Stock No. 9595 NET

RCA SERVICE EQUIPMENT

BEAT FREQUENCY AUDIO OSCILLATOR

The RCA Beat Frequency Audio Oscillator is an instrument that should be in the shop of every service engineer. It gives a variable frequency source of alternating current voltage from 30 to 15,000 cycles—more than the range of the finest radio receivers now built. It is excellent for testing loudspeakers, PA systems, for locating cabinet rattles, and for running fidelity curves on radio receivers. It has many other important service applications.

Provides choice of 3 output impedances through medium of tapped output transformer. Has large 8¾ inch dial over approximately 160 degrees for accurate setting. Attractive gray wrinkle finish with special snap handle.

Check the specifications and see what RCA offers in this fine new instrument.

SPECIFICATIONS

POWER RATING...110-120 volts, 50-60 cycles, 35 watts.

FUSE PROTECTION............1.0 ampere

OUTPUT FREQUENCY...30-15,000 cycles ± 1 db from 30 to 10,000 cycles down 2 db (at 15,000 cycles).

OUTPUT VOLTAGE
- Open circuit . 37.5 volts
- 5,000 ohm load 25 volts
- 500 ohm load. 7.5 volts
- 250 ohm load. 5.2 volts

POWER OUTPUT............125 milliwatts

RADIOTRONS
- RCA 6J7 . Fixed r-f oscillator
- RCA 6J7 . Variable oscillator
- RCA 6C5 .... Detector
- RCA 6J5 . . . Output amplifier
- RCA 5W4 .... Rectifier

HUM LEVEL...—60 db below maximum output.

DISTORTION...less than 5% rms over entire range.

DIMENSIONS...9½" x 13¼" x 6½". Weight, 15 lbs.

$49.95

Stock No. 154 NET

No. 154

UNIVERSAL AC BRIDGE

MEASURES
- Inductance......100 microhenries to 10 henries
- Capacity........10 micro-microfarads to 10 microfarads
- Resistance...1 ohm to 1 megohm

Here is an instrument that simplifies and speeds the analysis of many service or laboratory problems. It quickly checks inductance, capacity and resistance over extremely wide ranges. The only additional equipment needed is a headphone for use as a null indicator. This Universal AC Bridge, designed and manufactured by RCA, assures you of the finest engineering and quality. It's an instrument that will increase the efficiency of your work and the size of your earnings.

SPECIFICATIONS

CIRCUIT...Variable — Ratio — Arm A. C. Wheatstone Type Bridge.

TUBES...1 RCA-25Z5, 1 RCA-76, 1 RCA-6F7.

SIZE...............Case 6½" x 9¾" x 4½"

WEIGHT..........................5½ lbs.

RANGES...Resistance, 1 ohm to 1 megohm. Inductance, 100 microhenries to 10 henries.

Capacitance, 10 mmfd. to 10 mfd. Accuracy, 5% overall at full scale.

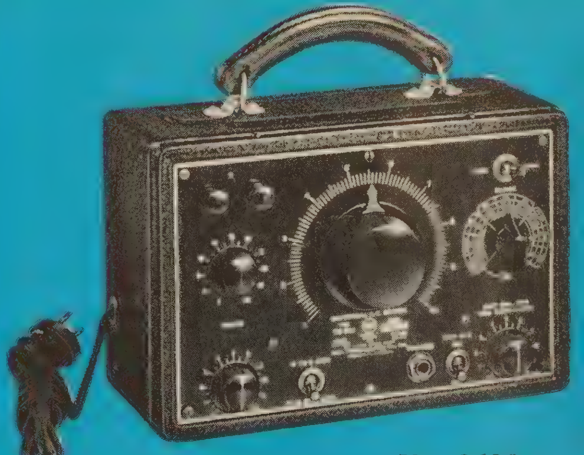
POWER SUPPLY...110-120 volts. 25-60 cycles a.c. Power consumption, 40 watts.

FREQUENCY OF AUDIO OSCILLATOR . . . 1,000 cycles ± 10%.

$49.65

Stock No. 9600 NET

Complete with all tubes and standards.



No. 9600

FREQUENCY MODULATOR

A motor-driven unit for aligning receivers with your test oscillator and oscillograph.

The RCA Frequency Modulator is designed to modulate the r-f frequency of your test oscillator (such as No. 153 or No. 9595) over a range sufficient for visual alignment with your oscillograph. It sweeps the r-f voltage over the resonant frequency of the circuit under test and generates an AC synchronizing voltage simultaneously. Permits the use of the reverse sweep method of alignment, the method used by all leading radio manufacturers. It is for use *only* with oscillators not having internal frequency modulations.

SPECIFICATIONS

TUNING CAPACITOR...Two sections—each 35 mmfd. capacity. Switch for connecting either or both in circuit.

CONNECTING CABLE...14-inch low-capacity connecting cable with plugs at each end.

GENERATOR FREQUENCY...Two cycles per revolution for positive synchronizing with double-sweep alignment.

GENERATOR VOLTAGE...1.5 volts minimum.

MOTOR...Repulsion induction type—1550 r.p.m.

PANEL CONTROLS..."Hi-Lo" capacity switch, "On-Off" switch, output binding posts and single-circuit jack.

FINISH...Gray wrinkle lacquer to match other RCA Test Equipment.

SIZE...Case (excluding handle) 6½ x 9¾" x 4½". Weight, 5¼ lbs.

CURRENT CONSUMPTION . . . 25 watts.

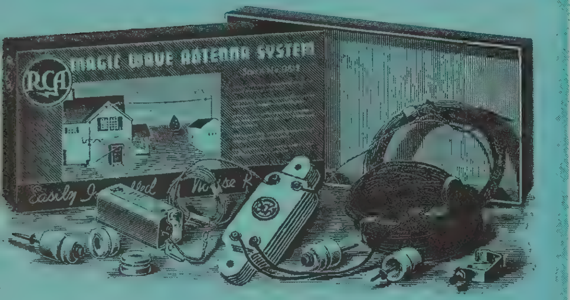
POWER SUPPLY...110 volts, 60 cycles a.c.

$27.50

Stock No. 9558 NET

No. 9558

RCA ANTENNAS FOR



No. 9812

IMPROVED MAGIC WAVE ANTENNA

A new highly efficient noise reducing antenna for every type of radio installation.

Here's an antenna that literally has "everything" a radio user requires. Noise reduction over all bands, flexibility in installation and high signal pick-up. In no other RCA antenna can you obtain *all* of the following features:

- Noise reduction of both standard and foreign broadcasting bands (530 to 23,000 k.c.).
- Built-in lightning arrester in antenna coupling unit.
- Operates up to 16 outlets from 1 antenna with additional coupling and distribution transformers (only slight reduction in signal strength).
- Easily installed. Completely assembled and soldered.
- Antenna may be from 20 to 120 feet long.
- Transmission line may be any length up to 500 feet.
- 30-foot length of pipe may be used for vertical antenna with underground transmission line.
- Uses magnetite core transformers.
- Can easily be attached to existing antennas.

$5.95

Stock No. 9812 LIST

(Includes complete assembly for single outlet installation)

Stock No. 9849, Antenna Coupling Transformer with Built-in Lightning Arrestor *(for assembling your own kit)*	**$2.00**
Stock No. 9814, Distribution Transformer *(1 required for each 4 additional receivers)*	**$3.00**
Stock No. 9813, Set Coupling Transformer *(1 required for each additional receiver)*	**$2.50**

No. 395

395 ANTENNA SYSTEM

At a figure everyone can afford to pay it is a scientifically designed system, operates perfectly with receivers of all types and manufacture and is unusually easy to install. Requires only two supports, 40 feet apart. All parts, including antenna wires, strain insulators, junction box, etc., are assembled and soldered.

Cash in on this low-priced antenna. Recommend it to your customers who need a quality antenna at a popular price.

CONTENTS OF KIT

2 Antenna Wire Coils—Each 20 feet long
2 Strain Insulators
1 Transmission Line—60 feet
1 Junction Box
1 Receiver Coupling Unit
2 Coupling Unit Links
2 Nail-On Knob Insulators
1 Ground Clamp
1 Instrument Sheet

$3.95

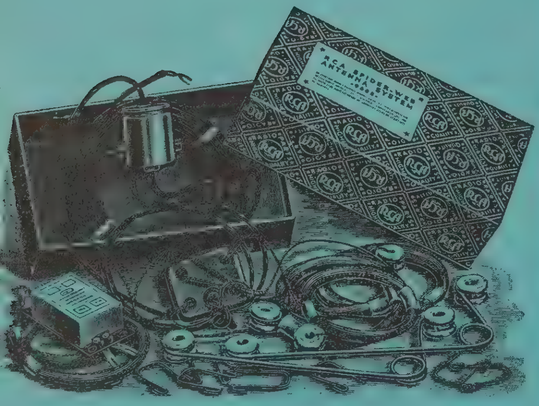
Stock No. 395 LIST

Stock No. 12855, Set Coupling Unit for 395 and RK-40 Antennas . List **$.75**

ADDITIONAL TRANSMISSION LINE

(For types not listed here, see page 17)

		List Price
Stock No. 9816	60 feet for No. 395, No. 9845, or No. 9852 Antenna	**$1.50**
Stock No. 11817	75 feet Submarine type for No. 9812 Antenna	**3.20**



No. 9685

SPIDER-WEB ANTENNA

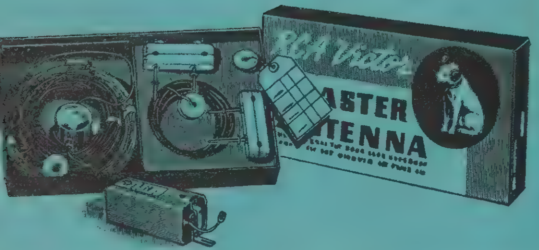
A Transoceanic Communications type antenna for the home. The RCA Spider-Web Antenna System gives excellent signal pick-up over the frequency range from 140 to 23,000 kc. By adding the stock No. 9689 High Frequency Kit, the range is increased to 70,000 kc. with full noise reduction. Complete factory assembling and soldering of all parts makes installation rapid and easy. Proper design requires only a span of 38 feet and a vertical clearance of 12 feet.

This antenna consists of a series of doublet antennas and an improved transmission line which gives the utmost in noise reduction of the signal pick-up over an extremely wide range. It is RCA's finest antenna, especially recommended for amateur and short wave reception.

List Price **$8.95**

Stock No. 9685

Stock No. 9689, High Frequency Kit .List **$1.50**



No. 9845

RCA VICTOR MASTER ANTENNA

For those difficult installations where extreme local noise cannot be eliminated by the usual noise-reducing antenna, the RCA Victor Master Antenna will often solve the problem. A new unique noise-balancing circuit, which is *individually adjusted* for each installation, gives a high degree of noise reduction, especially when the noise is from near-by electrical devices. This antenna is *not* dependent on location for its noise-reducing qualities.

The frequency range covered is from 540 to 23,000 kcs. including all standard broadcast and foreign short-wave bands.

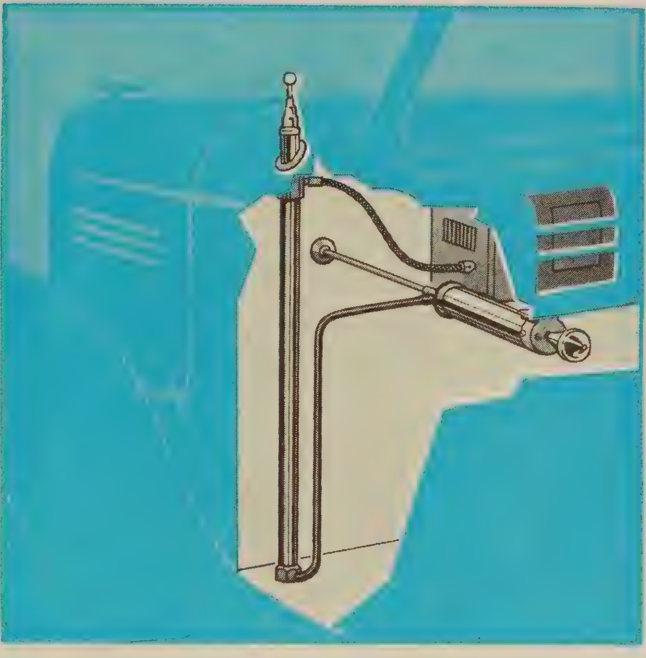
	List Price
Stock No. 9845 Complete with Receiver Coupling Transformer	**$6.95**
Stock No. 9852 (Model MA) less Receiver Coupling Transformer	**5.00**
Stock No. 9846 Receiver Coupling Transformer	**1.95**

HOME AND AUTOMOBILE

RCA AUTOMATIC

Here is an antenna that is different, an antenna that can be raised or lowered from inside your car! No more stopping and getting out. No more reaching out the window while driving. A stroke or two on its pneumatic plunger sends the RCA Automatic skyward—and it stays up as long as you wish—no sliding down. The compact operating mechanism attaches conveniently under the dash with only a modern plastic handle showing. At rest, only 3 inches of the antenna extends above the hood. Fully extended, it measures 41″, giving signal strength greater than cowl antennas ⅓ longer, because it is not shielded by being adjacent to the engine hood. Durable chrome finish provides beauty as well as weather resistance. Packed complete with 30-inch special low capacity cable. Weight: 2 lbs. 4 ozs. Individually packed.

List Price
$5.95
Stock No. 9895



RCA DELUXE COWLTENNA

4-SECTION 2-INSULATORS

A de luxe side mounting telescopic cowl antenna of graceful design. Measures only 29¾ inches when closed, but opens to 100 inches, making it ideal for remote or low signal-strength areas. Anti-rattle feature eliminates electrical and mechanical noise. Durable chrome finish with ceramic insulators. Price includes a 36-inch shielded cable. Weight: 27 ounces. Individually packed.

List Price
$4.25
Stock No. 9896

Three-section Cowltenna, 64¼″, two ceramic insulators.

List Price
$3.00
Stock No. 9899

RCA DELUXE HOODTENNA

4-SECTION 2-INSULATORS

The RCA Stock No. 9898 Hoodtenna is tops in concealed hood mounting antennas. 100 inches high when extended. Closed, it measures 29¾ inches. Inside-of-hood mounting is accomplished with two brackets and self-tapping screws. Uses ceramic insulators. Has patented anti-rattle feature. Finish is brilliant chrome. Packed complete with 33-inch shielded cable. Weight: 21 ounces. Individually packed.

List Price
$4.25
Stock No. 9898

RCA HOODTENNAS

3-SECTION 2-INSULATORS

These antennas are ideal for modern auto radio installations. Use under-hood mounting with two brackets and self-tapping screws. Anti-rattle construction to eliminate noise pick-up is important feature. High-gloss chrome finish. Ceramic insulators. Individually packed, complete with 33-inch shielded cable.

Length 94¼″ (open), 37¾″ (closed), Weight, 21 ounces.

List Price
$3.75
Stock No. 9894

Length 64¼″ (open), 28¼″ (closed), Weight, 19 ounces.

List Price
$3.00
Stock No. 9893

RCA HOODTENNA

2-SECTION SINGLE INSULATOR

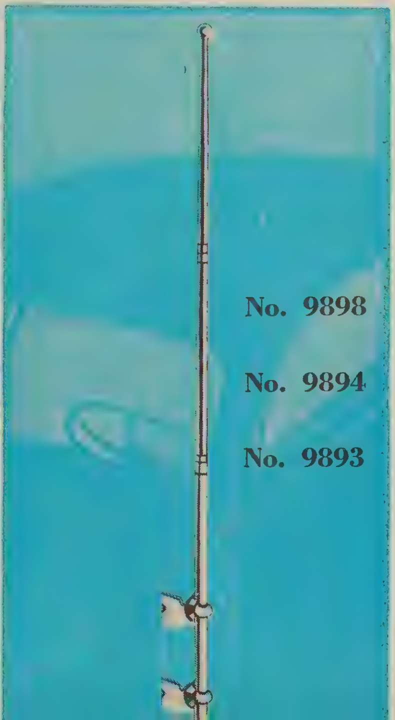
This new, compact antenna can be adjusted to the streamline angle of any car. Single under-hood mounting bracket is held by self-tapping metal screws. Electrical and mechanical noise pick-up is reduced by anti-rattle construction. Length closed, 27½ inches; open, 47 inches. Ceramic insulator. Attractive, durable chrome finish and trim. Packed complete with 33-inch shielded cable. Weight: 14 ounces. Individually packed.

List Price
$1.95
Stock No. 9892

RCA DI-POLE ANTENNA

At an unusually attractive price, the RCA Di-Pole Antenna has been the popular choice for under-car installations. Ignition interference is greatly reduced. In areas where the signal level is low, two RCA Di-Pole Antennas may be used, one under each running-board. Price includes a 50-inch shielded lead-in cable with bayonet connector and all necessary fittings.

List Price
$2.60
Stock No. 9605



RCA PHONOGRAPH PICK

RCA JUNIOR CRYSTAL PICK-UP

This pick-up not only has an unusually attractive price, but it has every important feature necessary for obtaining excellent fidelity of reproduction from records. It plays either 10″ or 12″ records, has a completely sealed crystal, and the needle position is offset to assure true tracking. The swiveled pick-up arm is easily raised to the vertical position for needle insertion. A new feature is the use of viscaloid dampening. This gives improved reception and reduces needle chatter. Shock-proof mounting parts are included. The entire assembly is finished in attractive brown wrinkle lacquer to harmonize with No. 33343 Motor.

SPECIFICATIONS

IMPEDANCE...100,000 ohms at 1,000 cycles (1,300 mmfd. over range 70-7,000 cycles).
FREQUENCY RANGE....70-7,000 cycles
OUTPUT VOLTAGE...1.5 volts at 1,000 cycles with 500,000 ohm load.
NEEDLE PRESSURE..........2.7 ounces
FINISH...........Brown wrinkle lacquer

List Price
$4.95
Stock No. 9891

33217—Crystal Cartridge for above.....List **$3.75**

31050—Crystal Cartridge for No. 9842 Pick-Up .... List **$3.75**

RCA IMPROVED JUNIOR PICK-UP ARM

This new pick-up arm incorporates all the features of the older types but has an unusually attractive molded housing. Excellent fidelity of reproduction is obtained through the use of a sealed crystal pick-up and the arm may be used for either 10- or 12-inch records. Needle insertion is easy and shock-proof mounting parts are included. The polished brown finish blends with any type of cabinet.

SPECIFICATIONS

IMPEDANCE...100,000 ohms at 1,000 cycles (1,300 mmfd. over range 70-7,000 cycles).
FREQUENCY RANGE....70-7,000 cycles
OUTPUT VOLTAGE...1.5 volts at 100 cycles with 500.000 ohm load.
NEEDLE PRESSURE..........2.7 ounces
FINISH........Polished moulded Bakelite

List Price
$5.45
Stock No. 9868

33122—Crystal Cartridge for above....List **$3.75**

RCA SENIOR CRYSTAL PICK-UP

Modern design plus top needle loading are outstanding features of this fine RCA Pick-up. With the Stock No. 33909 needle box, used needles are ejected by merely loosening the needle screw and pressing the needle box lever. New needles are inserted by placing them in the hole at the top, while the ejector functions as a needle positioning bracket. This is a sturdy, well-built pick-up and arm that gives unusually fine record reproduction. Recommend it to your most discriminating customers.

SPECIFICATIONS

IMPEDANCE...100,000 ohms at 1,000 cycles (1,300 mmfd. over range 70-7,000 cycles).
FREQUENCY RANGE....70-7,000 cycles
OUTPUT VOLTAGE...1.5 volts at 1,000 cycles with 500,000 ohm load.
NEEDLE PRESSURE...........3 ounces
FINISH...........Brown wrinkle lacquer

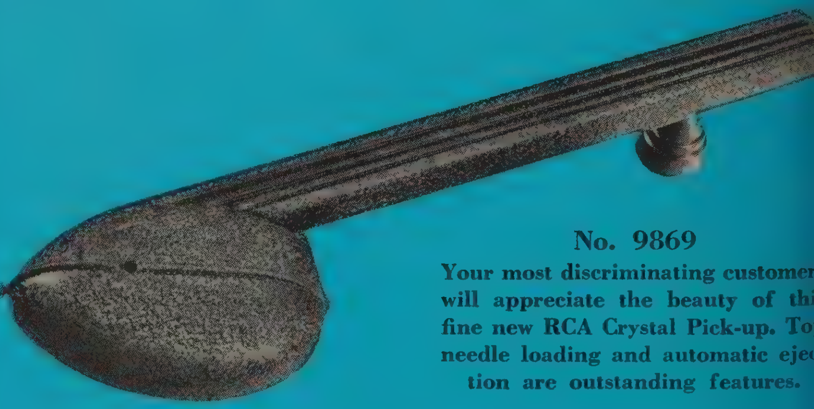
List Price
$6.45
Stock No. 9869
(Less needle bracket)

Stock No. 33909 Needle Box and Pick-up Rest .... List Price **$1.00**

33905—Crystal Cartridge for above.....List **4.25**

No. 9891
This fine quality pick-up is used on many record players and Victrola combinations. Has sealed crystal pick-up and true-tracking tone arm.

No. 9868
A new RCA Pick-up that is house
in a beautiful tone arm of moulde
brown bakelite. Makes an attrac
tive unit for modernization use.



No. 9869
Your most discriminating custome
will appreciate the beauty of th
fine new RCA Crystal Pick-up. To
needle loading and automatic eje
tion are outstanding features.

UPS AND ACCESSORIES . . .

MAGNETIC PICK-UPS AND ARMS

INERTIA TYPE

These RCA Magnetic Pick-ups and Inertia Type Arms are the finest units of this type available. The pick-ups use *viscoloid* damping blocks to assure undistorted reproduction, while the design of the arm gives excellent frequency response. An improved type of rubber mounting prevents vibration pick-up from the motor, while a shielded lead permits noise-free connections to the input circuit.

These pick-ups and arms are furnished in a variety of impedances and finishes. Select the one that is best suited for your requirements. You are assured of the finest in magnetic pick-up design.

MAGNETIC PICK-UP HEADS

Stock No.	List Price	Finish	Impedance at 1,000 cycles	Output Voltage at 400 cycles
9661	$6.50	Walnut	8.5	.038
9665	6.50	Walnut	30	.083
9676	6.50	Black	400	.285
9669*	6.50	Walnut	700	.46
9670	6.50	Walnut	2,800	.65
9675	6.50	Black	8,500	1.21
9749	6.50	Walnut	8,500	1.21

*Viscoloid Damping not included.

INERTIA TYPE SUSPENSION ARMS

Stock No.	List Price	Finish
9678	$7.50	Walnut
9679	7.50	Black

All RCA Suspension Arms fit any of the pick-ups shown above. Suspension arms include a plain escutcheon and a plug for connecting to the magnetic pick-up.

SYNCHRONOUS REACTION MOTOR AND TURNTABLE

This new motor is used on many RCA Victor Combinations and Record Players. It has shock-proof mountings and is free from wows. This unit is simple in design and is practically wear- and trouble-free in operation. Turntable is finished in an attractive brown flock which blends with any cabinet finish. A soft rubber spindle cap prevents vibration pick-up by records. Turntable diameter, 7 inches. Plays any size record up to twelve inches in diameter. Consumes only 10 watts.

LIST
$\$5^{\underline{95}}$
Stock No. 33343

RCA OSCILLATOR—MODULATOR

A Miniature Broadcasting Station for Every Home.

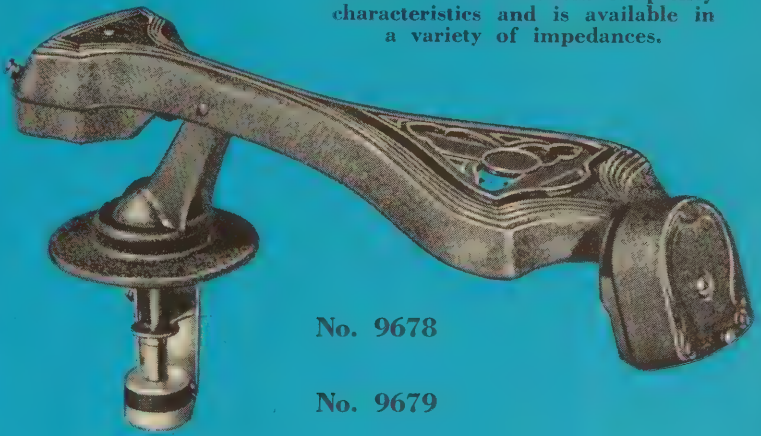
With this unit you may easily connect either a high impedance microphone or phonograph pick-up to your broadcast receiver irrespective of its type or manufacture. So connected it furnishes a modulated signal which is fed into the input of the radio, similar to that obtained from a broadcast station. Operates from either AC or DC.

SPECIFICATIONS

TUBE....................1 12A7
FREQUENCY RANGE...950 kc.-1300 kc.
INPUT POWER...............35 watts
WEIGHT.......................1¾ lbs.
SHIPPING WEIGHT..............3 lbs.

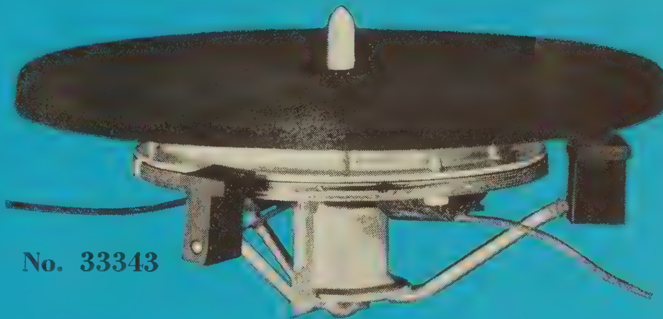
List Price
$\$7^{\underline{45}}$
Stock No. 41907

For many years, the RCA Victor Inertia Tone Arm and Magnetic Pick-up assembly has been a favorite. It has excellent frequency characteristics and is available in a variety of impedances.



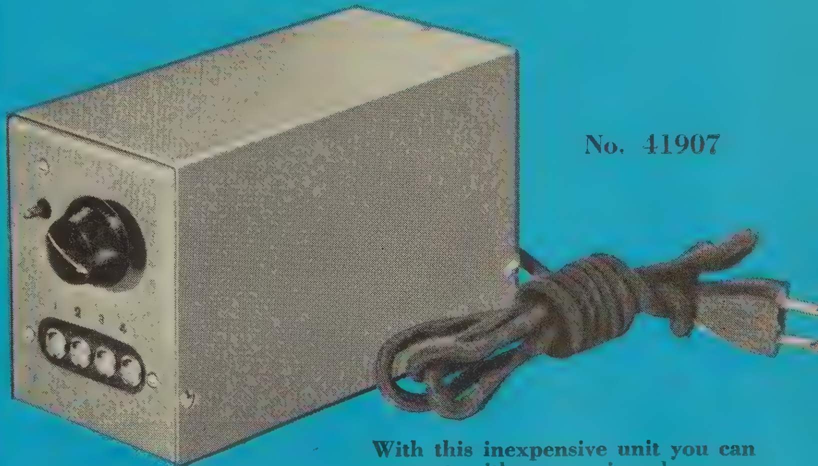
No. 9678

No. 9679



No. 33343

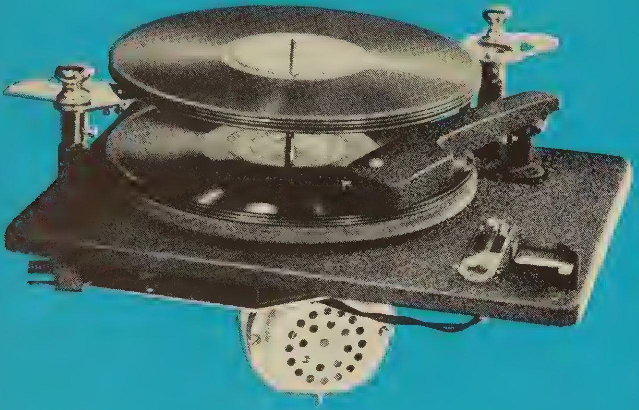
A smooth, easy-running motor that is excellent for modernization jobs. Easy to install and plays both 10- and 12-inch records.



No. 41907

With this inexpensive unit you can connect either a microphone or pick-up to the most difficult receiver without any internal connections.

RCA RECORD PLAYERS



No. 9865—This new automatic Record Changer is exactly the same as that used in the finest RCA Victrolas for 1940. Plays both 10- and 12-inch records.

AUTOMATIC RECORD CHANGER

This improved RCA Automatic Record Changer plays seven 12-inch records or eight 10-inch records automatically and repeats the last record. Records of any size may be played manually. A reject lever is incorporated which automatically feeds in the next record.

The mechanism is of a simple, fool-proof design and positive in operation. An important feature is the top loading crystal pick-up with an automatic needle ejector and receptacle. Whenever it is desired to remove a needle, the needle screw is merely loosened and the ejector lever pushed down.

Proper positioning of the arm in which the needle is off-set to assure best tracking, together with proper needle pressure, insures minimum wear on records.

SPECIFICATIONS

AUTOMATIC OPERATION...Eight ten-inch or seven twelve-inch. Repeats last record until it is turned off. Operation of reject lever automatically changes to next record.

MANUAL OPERATION...Plays any size record up to 12 inches.

PICK-UP IMPEDANCE...100,000 ohms at 1,000 cycles (1,300 mmfd. over the range 70-7,000 cycles).

OUTPUT...1.5 volts at 1,000 cycles with 500,000 ohm load.

FINISH...Attractive brown wrinkle lacquer with chromium trim.

NEEDLE PRESSURE.........3 ounces

POWER SUPPLY...110-120 volts, 60 cycles, 25 watts.

DIMENSIONS...Motorboard 14¾″ wide by 11½″ deep. Space required above motorboard 4¼″.

List Price

Stock No. 9865 **$44.95**

34710—Crystal Cartridge for above.................List **$4.25**

RCA Victrola Attachment Model R-93-F. This unit permits you to play records through any modern a-c radio. The cabinet is made of beautiful bakelite.

RCA VICTOR RECORD PLAYER

Model R-93-F

An inexpensive instrument that quickly converts any modern A-C radio into an electrical radio-phonograph combination. Plays both ten- and twelve-inch records with all the volume and fidelity of the set to which it is attached. Includes cushion-mounted, constant speed electric motor, latest type feather-touch crystal pick-up in modern bakelite tone arm. Arm easily tilted to the vertical position for insertion of needle.

SPECIFICATIONS

POWER SUPPLY...110-120 volts, 60 cycles, 10 watts.

PICK-UP IMPEDANCE...100,000 ohms at 1,000 cycles.

CABLE CONNECTION...32-inch cable with male fitting for connection to 1940 RCA Victor radios. Use No. 9824 Switch and Cable Assembly shown on page 19 for connection to other radios.

CABINET...Attractive brown bakelite cabinet of modern design. Width 11⅜″, depth 9⅞″, height 3″.

Stock No. R-93F

Ask your distributor for special low price.

Play records without any connection to your radio with this modern wireless record player.

RCA VICTOR WIRELESS RECORD PLAYER

Model VA-20

With this unique accessory, you may play records through any radio, without making any connections. Not only does it give excellent reproduction—the same as obtained from a high quality broadcasting station—but it may be located within a radius of 30-50 feet from the instrument with which it is being used. The feather-touch crystal pick-up and true-tracking tone arm insure minimum record wear while an RCA constant speed motor eliminates "wows" and distortion. Has modulation type volume control with an on-off switch, adjustable output frequency and pilot lamp. Rich brown bakelite cabinet. H. 5″, W. $12\frac{9}{16}$″, D. 8¼″.

List Price **$17.95**

Stock No. VA-20

AND MICROPHONES . . .

RCA CARBON MICROPHONE

Here is the finest microphone value ever. This is not a toy but is a genuine RCA Single Button Carbon Microphone that gives unusually fine performance. May be used with the RCA Stock No. 41907 Oscillator or in any other application where an inexpensive high-quality carbon microphone is required.

SPECIFICATIONS

INPUT IMPEDANCE..........................1,200 ohms
MICROPHONE CURRENT......................5-10 M.A.
SHIPPING WEIGHT.................................1 lb.

(Shipped in carton of 6)

Stock No. 41905
$1.25
List Price, each

No. 41905

AERODYNAMIC MICROPHONE

An outstanding microphone by RCA, high in quality, low in price—ideal for every public address, amateur or experimental use—that is the RCA Aerodynamic Microphone. The new RCA Aerodynamic Microphone is of the pressure-operated dynamic type which is very popular with all microphone users. It is insensitive to mechanical vibration and requires no excitation or power supply. The low impedance type may be located up to 1,000 feet from the input amplifier. The high impedance type is fitted with a 30-foot shielded cable. Both are impervious to changes in temperature, humidity and barometric pressure and have a minimum wind response. Thoroughly shielded and not affected by r-f or a-c fields. Includes fitting for adapting 1/8″ pipe fitting to 5/8″—27 thread used on standard microphone stands.

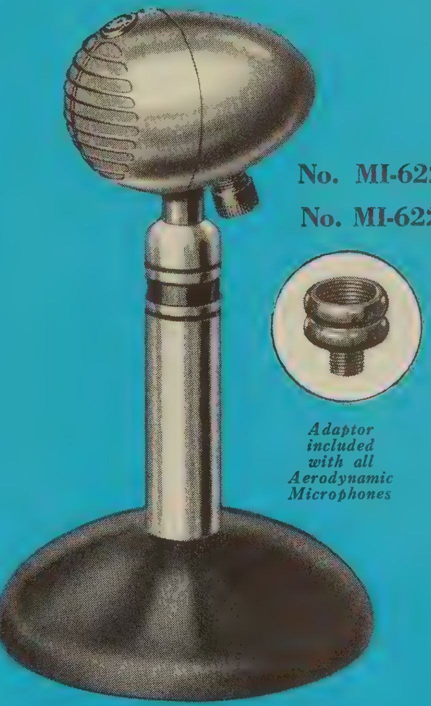
SPECIFICATIONS

TYPE......Pressure operated
FREQUENCY RANGE...100 to 6,000 cycles.
IMPEDANCE...250 ohms or 40,000 ohms.
AVERAGE OPERATING LEVEL...—68 db. (10 bar signal across open circuit).
DIMENSIONS...2 5/8″ wide, 3″ high, 3 3/8″ deep.
NET WEIGHT......1 1/4 lbs.
FINISH...Polished chromium.
STAND FITTING SIZE...1/8″ pipe thread.
CABLE..........30′ shielded

$19.95
List Price
Low impedance type — 250 ohms
Stock No. MI-6226-D
Less Stand

Stock No. MI-6228-B—High impedance type—40,000 ohms, includes 30 feet shielded cable—List Price—less stand **$21.95**

Stock No. MI-6227—Table stand shown at right. Finished in chromium and black with felt covered base. List Price **$2.65**


No. MI-6226-D
No. MI-6228-B

Adaptor included with all Aerodynamic Microphones

MANUAL MOTORBOARD ASSEMBLY

A new self-starting motorboard assembly for modernization and sound work. Includes automatic stop, top loading crystal pick-up, combination needle box and needle ejector, and pick-up shorting switch. Makes a neat appearing installation that is suitable for use with radios or amplifiers of all types and description. A new rubber spindle cap prevents vibration transfer to the record while the entire assembly is furnished with shock-proof spring mounting suspension. Finished in attractive brown wrinkle lacquer.

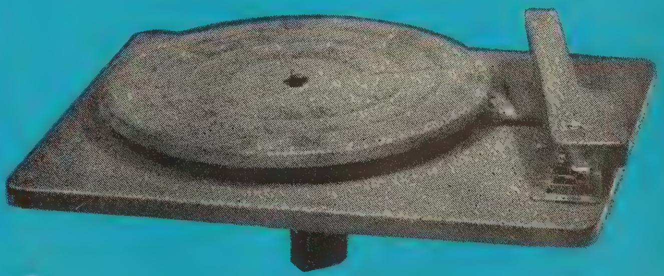
SPECIFICATIONS

POWER SUPPLY...110-120 volts, 60 cycles, 25 watts.
PICK-UP IMPEDANCE...100,000 ohms at 1,000 cycles (1,600 mmf. over entire frequency range).
OUTPUT...1.5 volts with 500,000 ohm load.
FIDELITY.........Flat—70-7,000 cycles
NEEDLE PRESSURE.........3 ounces
Includes pick-up shorting switch.
DIMENSIONS.............Turntable 9″ Dia.,—motorboard 14 3/4″ wide by 11 1/2″ deep. Space required beneath board 3″. Clearance above board 3 1/4″.

List Price
$24.95
Stock No. 9850

31156—Crystal Cartridge for above (and Stock No. 9844) . List **$4.25**

(Below) Manual Motorboard. An excellent unit for rebuilding old Victrolas or Combinations. Uses the RCA Crystal Pick-up and a new self-starting motor.


No. 9850

RCA TELEVISION PARTS for KINESCOPE DEFLECTING CIRCUITS

RCA has made available many of the component parts that are basic units for the construction of kinescope deflecting circuits. These parts have been developed by RCA engineers in accordance with proven scientific principles and are manufactured for long, efficient service. Typical schematic diagrams or deflection circuits using these parts will be furnished on request.

PARTS FOR USE WITH RCA 9- AND 12-INCH MAGNETIC DEFLECTION KINESCOPES RCA TYPES 1804-P4 AND 1803-P4

STOCK NO.

9857 YOKE

Has windings for horizontal and vertical deflecting circuits. Designed for uniform flux distribution.
Vertical coil inductance........................45 MH (45 ohms)
Horizontal coil inductance ....1.5 MH (5 ohms)
One vertical coil has 5,600 ohm resistor connected in parallel to counteract transient waves from horizontal coil.

List Price **$17.50**

9861 HIGH VOLTAGE POWER TRANSFORMER

Primary ....117 volts
Rectifier Filament Winding.......................2.5 volts, 5 amps.
Secondary High Voltage Winding............7,000 volts, 0.002 amp.

List Price **$22.50**

9862 HORIZONTAL OUTPUT TRANSFORMER

Has correct characteristics to supply a 13,200 cycle saw-tooth current wave to deflecting yoke.
Core and coil rubber-mounted to eliminate noise.
Primary DC resistance ....13.2 ohms
Secondary DC resistance ....0.825 ohms
Ratio 5.78:1

List Price **$17.50**

STOCK NO.

32898 VERTICAL OSCILLATION TRANSFORMER

Designed for low-frequency blocking-oscillator circuit. Most efficient at 60 cycles.
Primary DC resistance ....670 ohms
Secondary DC resistance ....135 ohms
Ratio 4.16:1

List Price **$1.75**

32899 HORIZONTAL OSCILLATION TRANSFORMER

Designed for high-frequency blocking-oscillator circuit. High efficiency at 13,200 cycles.
Primary DC resistance ....3.5 ohms
Secondary DC resistance ....8.55 ohms
Ratio 1:2

List Price **$1.75**

32900 VERTICAL OUTPUT TRANSFORMER

Primary DC resistance ....1,122 ohms
Secondary DC resistance ....8 ohms
Ratio 15.95:1

List Price **$5.50**

33018 HIGH VOLTAGE FILTER CAPACITOR—With Bracket (2 required) 0.03 mfd. at 7,500 volts.

Oil-filled, fireproof, dielectric material has long life.

List Price **$3.75**

PARTS FOR USE WITH RCA FIVE-INCH ELECTROSTATIC-DEFLECTION KINESCOPE RCA 1802-P4

STOCK NO.

32898 VERTICAL OSCILLATION TRANSFORMER

Designed for low-frequency blocking-oscillator circuit. most efficient at 60 cycles.
Primary DC resistance ....670 ohms
Secondary DC resistance ....135 ohms
Ratio 4.16:1

List Price **$1.75**

STOCK NO.

32899 HORIZONTAL OSCILLATION TRANSFORMER

Designed for high-frequency blocking-oscillator circuits. High efficiency at frequency of 13,200 cycles.
Primary DC resistance ....3.5 ohms
Secondary DC resistance ....8.55 ohms
Ratio 1:2

List Price **$1.75**

33020 TWO SECTION HIGH VOLTAGE FILTER CAPACITOR—With Bracket

One section .... .15 mfd. at 2,500 volts
One section .... .05 mfd. at 3,000 volts

List Price **$2.65**

33120 LOW VOLTAGE REACTOR

8 Henries at 0.14 amp. DC.
DC resistance ....315 ohms

List Price **$3.25**

STOCK NO.

33190 THREE-SECTION ELECTROLYTIC FILTER CAPACITOR

Two Sections ....30 mfd. at 450 volts
One Section ....10 mfd. at 150 volts

List Price **$2.50**

33211 HIGH VOLTAGE RECTIFIER SOCKET—4 prong

Molded of Bakelite. Eliminates corona and ionization—constructed with ample space between plate terminals and ground to prevent high voltage breakdown. Designed to prevent dust collecting over contacts.

List Price **$1.00**

33340 VERTICAL COUPLING CAPACITOR (2 required)

.005 mfd. at 3,000 volts.
Long life—withstands high humidity.

List Price **$ .50**

33341 HORIZONTAL COUPLING CAPACITOR (2 required)

0.05 mfd. at 3,000 volts.
Withstands high humidity—has long life.

List Price **$ .50**

33390 POWER TRANSFORMER

Primary, 117 volts.
Secondaries:
  Low Voltage Plate..........................660 V. (330 each side) 0.14 A.
  High Voltage Plate.........................2,240 V. 0.002 Amp.
  Low Voltage Windings...6.6 V., 0.3 Amp.; 6.3 V., 0.6 Amp.; 5.0 V., 3.0 Amp.; 2.5 V., 1.75 Amp.; 12.6 Volt (6.3 each side), 3.82 Amp.

List Price **$13.50**

RCA TELEVISION ANTENNAS

RCA VICTOR DOUBLE DI-POLE TELEVISION ANTENNA

The Stock No. 9871 is RCA Victor's finest Television antenna for use where reflection is not a problem. It provides excellent reception on any one of the five channels for which RCA Victor Television Receivers are designed (the 44-50, 50-56, 66-72, 78-84, and 84-90 megacycle bands) giving excellent signal strength and noise reduction on each one. The Double Di-Pole Antenna consists of 4 antenna rods, a wooden mounting pole, and accessories for convenient location. Numerous other accessories for increasing its height, for making special types of installations, etc., are available. All metal parts are corrosion proof. In localities where serious problems of reflection or distortion of any type are encountered, the RCA Victor Double Di-Pole Television Reflector, Stock No. 9872, should be used in conjunction with the 9871 antenna.

STOCK NO. 9871 LIST PRICE **$7.50**

RCA VICTOR DOUBLE DI-POLE TELEVISION REFLECTOR

The Stock No. 9872 Reflector is designed for use in conjunction with the Stock No. 9871 Double Di-Pole Television Antenna in locations where the Television signal travels two paths in arriving at the receiver. (The signal may reflect from some obstacle in addition to taking the line-of-sight path, resulting in a blurred image.) The Double Di-Pole Reflector gives improved reception from one direction with rejection of signals from the opposite direction in the ratio of three to one on the Television bands from 44 to 50 mcs., and from 50 to 56 mcs. There is also increased gain of approximately 50% of signals from the desired direction. This antenna is of simple construction and is easily installed. Accessories for making installation in practically any location are listed below. All metal parts are corrosion proof.

STOCK NO. 9872 LIST PRICE **$13.75**

RCA VICTOR DOUBLE "V" TELEVISION ANTENNA

At a popular price, the RCA Victor Stock No. 9870 Antenna is designed for installation where reflection problems are not encountered. (Suitable for most suburban areas.) The Double "V"-Type Antenna is packed completely assembled (needing only supports for either end) for reception on the 44-50 mc. and the 50-56 mc. bands. (By changing the length of the wires between the hanger insulator and the center of the junction box reception of other Television channels may be obtained.) A junction box, 90 feet of transmission line, and full installation instructions are included with each antenna. All parts are weather-proofed to give a long period of trouble-free service.

STOCK NO. 9870 LIST PRICE **$4.00**

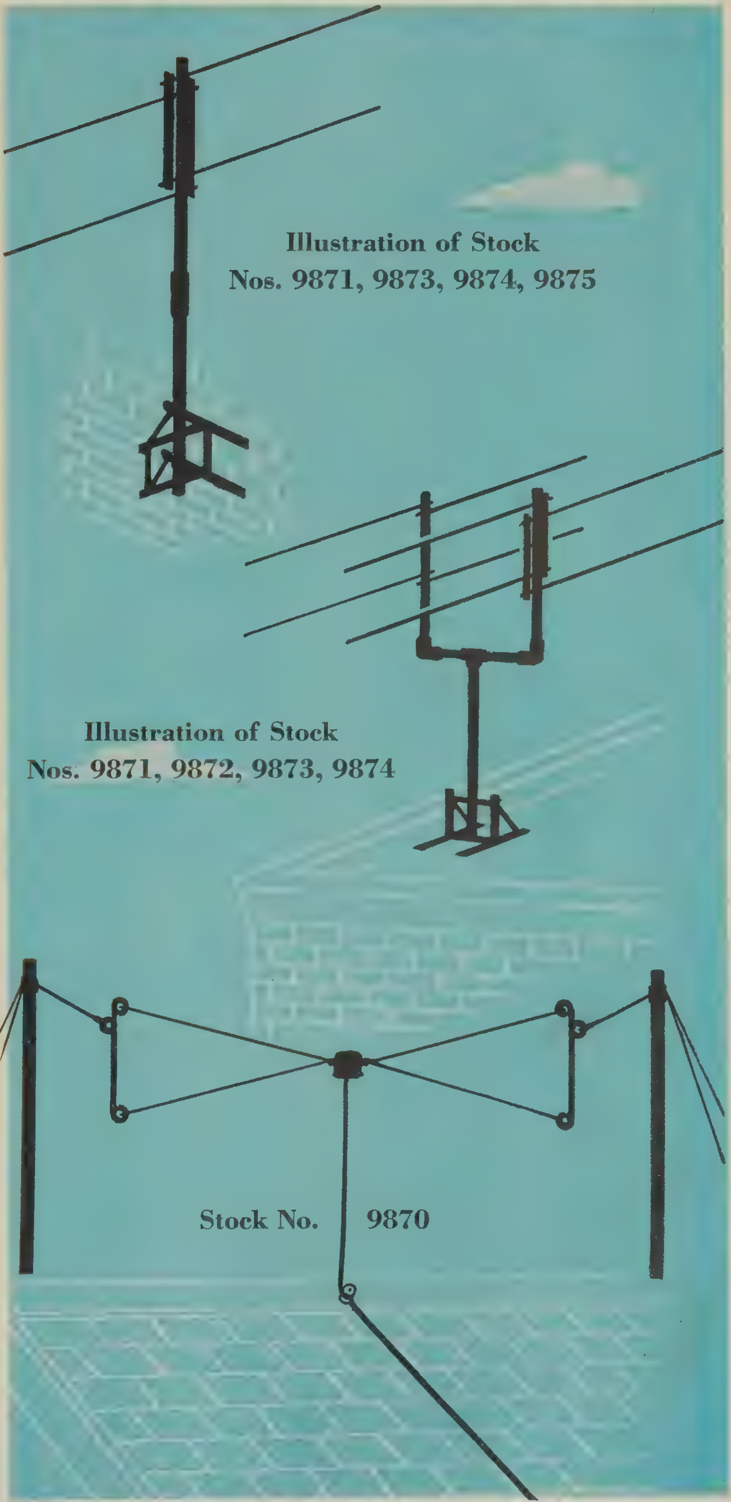


Illustration of Stock Nos. 9871, 9873, 9874, 9875

Illustration of Stock Nos. 9871, 9872, 9873, 9874

Stock No. 9870

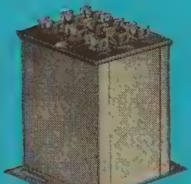
ACCESSORIES FOR THE 9871 AND 9872 ANTENNA

STOCK NO.		LIST PRICE
9873	Mounting Bracket—complete	$7.25
9874	Galvanized Pipe—six feet long	2.45
9875	Extension Pole Coupler (for use with the 9871 only)	1.90
12429	Transmission Line—45 feet	2.00
12430	Transmission Line—90 feet	3.75

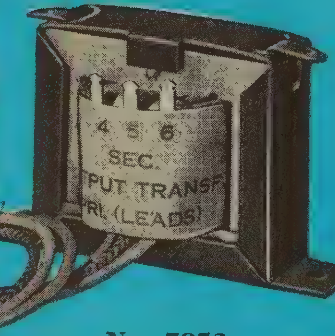
STOCK NO.		LIST PRICE
9881	Transmission Line—1,000-foot spool	19.30
9882	Transmission Line—1,000 feet—special low-loss type	125.00
9883	Transmission Line—1,000 feet—white—for indoor use	18.00
9884	Transmission Line—1,000 feet—brown—for indoor use	18.00
9885	Distribution Transformer (provides for operation of 4 receivers from one antenna)	5.50

RCA TRANSFORMERS

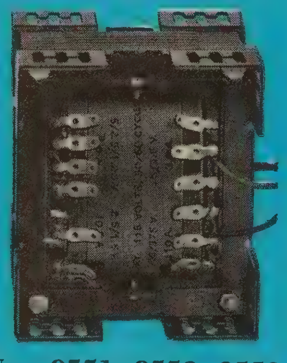
No. 9632



No. 7853



No. 7852



Nos. 9551, 9552, 9553

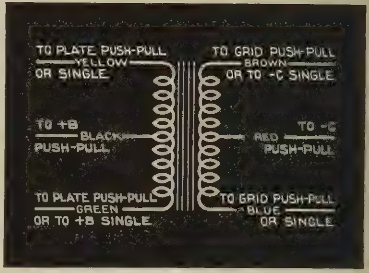
No. 9556

For 4-tube sets, this small high quality transformer offers the midget receiver user the same high quality replacement that is offered by the three larger units.

See Page 16 for Television Transformers

UNIVERSAL INTERSTAGE A-F TRANSFORMER

The RCA Interstage Transformer permits you to make all audio transformer replacements with a single unit. It contains a center tapped primary and a center tapped secondary for connecting either *from* or *to* any single or push-pull stage. Has proper step-up ratio and is easily mounted on any type of chassis. Also recommended to step up pick-up output for use with low gain amplifiers.



CIRCUIT DIAGRAM

SPECIFICATIONS

SIZE...2" x 2⅜" x 2⅞". Shielded black finish case—vacuum wax impregnated.

TURN RATIO...Primary to secondary 1:3 overall.

PRIMARY CURRENT...10 milliamperes d. c. (Maximum).

FREQUENCY RESPONSE.....30-10,000 cycles

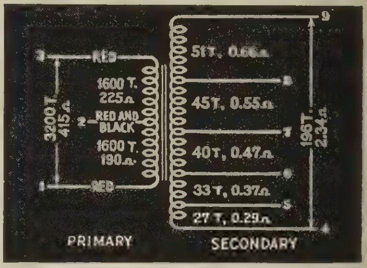
PRIMARY CONNECTIONS...Primary connects to any single or push-pull triode. Secondary, to any single or push-pull stage regardless of tube type.

$2.00

Stock No. 9632 LIST

UNIVERSAL OUTPUT TRANSFORMERS

This output transformer fits any combination of tubes and speakers ordinarily encountered in service work. It is quickly mounted by means of slot angle brackets, has a silicon steel core and its windings are protected with a baked varnish impregnation. Tinned terminals and long primary leads make installation easy. Fits practically all output tubes and speakers.



CIRCUIT DIAGRAM

SPECIFICATIONS

SIZE...Standard Model—2¾" x 2¼" x 2". Tropical Model—2¾" x 2⅜" x 3".

VOICE-COIL IMPEDANCES....1 to 15 ohms

PRIMARY LOAD IMPEDANCES...1,000 to 20,000 ohms.

MAXIMUM WORKING POTENTIAL...500 volts.

MAXIMUM PLATE CURRENT (each tube) ...55 milliamperes.

FREQUENCY RANGE ...30 to 10,000 cycles.

$2.00

Stock No. 7852 LIST

SPECIAL TROPICAL MODEL

This is the same transformer in a special case having vacuum wax impregnated windings and complete potting in asphalt for use under the most severe climatic conditions.

$2.35

Stock No. 7853 LIST

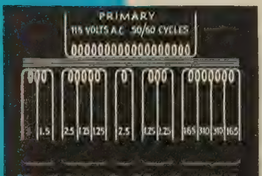
UNIVERSAL POWER TRANSFORMERS

FOR SETS HAVING EITHER 2.5- OR 6.3-VOLT HEATERS

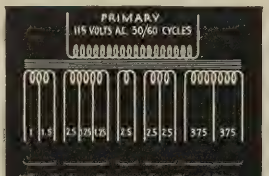
With these four transformers, you are in a position to take care of practically any power transformer replacement required in modern radio receivers. Slots are made for mounting in every conceivable position, thereby giving maximum flexibility. Soldered terminals and an insulated terminal cover are important quality features.

The Class "B" Transformer, Stock No. 9552, is a favorite with amateurs for modulator power supply and other important experimental uses. Check the taps and voltages and see the value in these transformers.

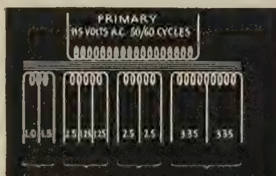
CLASS "B" Sets
Stock No. 9552
List Price **$4.50**



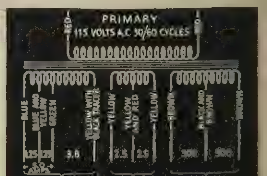
10-12 Tube Sets
Stock No. 9551
List Price **$4.25**



5-9 Tube Sets
Stock No. 9553
List Price **$3.75**



4 Tube Sets
Stock No. 9556
List Price **$1.45**



RCA ACCESSORIES

RCA MULTI-RANGE WAVE TRAP

Attenuation at tuning frequency 40-1 (average) over entire broadcast band!
Frequency Range 450 KC to 2,100 KC.

For those receivers and locations that are troubled by unwanted interference or inadequate reception of certain stations, the RCA Multi-Range Wave Trap will be found the logical answer. This new unit is tuned by means of a magnetite core which provides a simple linear and permanent adjustment. The RCA Multi-Range Wave Trap is adequately shielded for protection against interference and reaction with receiver circuits. Its small size and simple mounting make it easy to install.

$1.85
List Price
Stock No. 33033

OSCILLOGRAPH CONNECTING CABLES

For connecting between your oscillograph, test oscillator and radio chassis, you need low capacity shielded cables with handy connecting clips. The Stock No. 9797 assembly consists of three shielded cables designed especially for this use and is a necessity for everyone using the oscillographic method of alignment.

$1.50
NET
Stock No. 9797

RECORD PLAYER CONNECTING SWITCH AND CABLE

This switch is for connecting the RCA Victor Record Player, or any other type of phonograph turntable assembly to a radio receiver so that the user may quickly change from radio to record reproduction. Consists of a small switch assembly that is readily attached to the back of any radio cabinet and sufficient length of shielded cable that may either be connected to a phonograph terminal board or to the proper internal chassis wiring. Knob and mounting screws included.

$1.00
LIST
Stock No. 9824

RCA VICTOR SERVICE NOTES

Nine volumes of RCA Victor Service Notes cover the complete service information on all RCA Radiola, Victor Talking Machine Company and RCA Victor and service test equipment produced from 1923 until 1939.

These books not only contain all of the wiring diagrams, but also contain complete alignment instructions and other details available from no other source. They are a necessity for every practicing service engineer.

Stock No. 100—1923-28
Stock No. 101—1929-30
Stock No. 102—1931-32
Stock No. 103—1933
Stock No. 104—1934
Stock No. 105—1935
Stock No. 106—1936
Stock No. 107—1937
Stock No. 108—1938

$1.25
NET *each volume*

RCA VICTOR CABINET REFINISHING KIT

Here is a kit that should be a part of every service engineer's equipment. Includes all essentials to perform any small touch-up job or a general cabinet cleaning that you may be called upon to perform. Attention to cabinet details is a sure way of selling yourself to your customers. Every customer appreciates a nice clean piece of furniture and you can sell this service for a good price if you have and use this kit.

CONTENTS:

One each of the following—
Can Refco oil
Can rubbing oil
Assorted stick shellac
Spatula
Two packages of aniline stain powders
Instruction sheet
The entire contents are packed in a durable leatherette case with snap buttons.

Can Tripoli
Assorted sandpaper
Touch-up brush
Rubbing block

$2.90
Stock No. 9546 NET

RCA EARPHONE ADAPTOR

A handy unit for connecting hearing aids or headphones to any radio. Has three positions—one for radio alone, one for both earphones and radio, and one for earphones alone. Easily connected across voice coil and gives proper impedance match. Finished in attractive brown wrinkle lacquer and fitted with 36-inch cable and terminal block.

Stock No. 9715
LIST PRICE **$3.50**

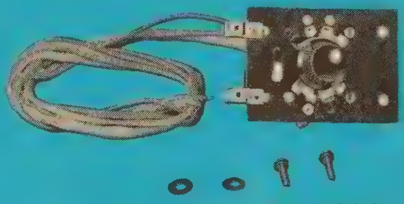
RCA TUBE TESTER MODERNIZATION KIT

Bring your RCA Tube Tester Model 156 or 156A up to date with this kit. Makes it the equivalent electrically of the Model 156B or C. Contains transformer (filament voltages up to 120), switch, escutcheon, adaptor, and all fittings except "Loktal" type adaptor.

Stock No. 9901
NET **$6.25**
Stock No. 9863—Loktal Socket Kit—$.50 (Illustrated and designed for Loktal Tubes unless adaptor is used.)

No. 33033

No. 9797



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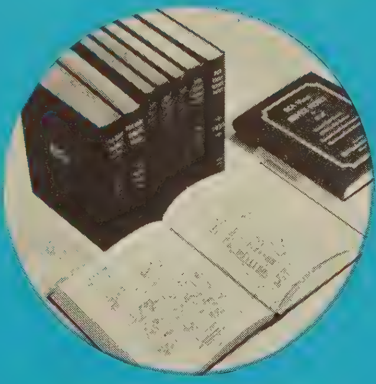

No. 100-108

No. 9546

REPLACEMENT PARTS Guide

The following index gives the stock numbers of the important parts for the instruments listed. RCA Victor parts are exact replacements, are readily identified, and may be purchased from RCA Parts Distributors. Use this guide for quickly finding the part you need. For Prices, refer to RCA Dealer Parts List.

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
HF-1	31069		30748 30749 30747 31067	31063	31064 (3rd) 31065		31062	12667	31060		11211	30105(16) 5212(16) 14531(25)
HF-2	31263 (A) 31264	31265 (A) 31266 (19, 25, 31 and 49 meter)	31257 (A) 31258 (19 meter) 31254 (25 meter) 31255 (31 meter) 31256 (49 meter)	31565	31551 31549 (3rd)		31557	31275	31547	31456	31225	31553(16) 31495(20)
4-T	11661		11662	12627	12630		12575	12574	11663		11664	11240
4-X (Spkr. No. 80864-2) (Spkr. No. 80864-1)	12837		12838	12839	12840		13151 12500	13148 12498	12836			12844
4X-3 (Spkr. No. M80864-2) (Spkr. No. M80864-1)	12837		12838	12839	12840		13151 12500	13148 12498	12836			12844
4X-4 (Spkr. No. M80864-2) (Spkr. No. M80864-1)	12837		12838	12839	12840		13151 12500	13148 12498	12836			12844
HF-4	31263 (A) 31264	31265 (A) 31266 (19, 25, 31 and 49 meter)	31257 (A) 31258 (19 meter) 31254 (25 meter) 31255 (31 meter) 31256 (49 meter)	31565	31551 31549 (3rd)		31557	31275	31547	31456	31225	31553(16) 31495(20)
T4-8	5051		5050	11187	6663		4803	9588	6667		9464	6661
T4-8A	11661		11662	5152	7955		4893	9588	11663		11664	11240
T4-9	5051		5050	11187	6663		4803	9588	6667		9464	6661
T4-9A	11661		11662	5152	7955		4893	9588	11663		11664	11240
T4-10	11261	6821						9471	11263			7956
5-BT	13293		13294	12801	12802	12803		12642	13214			13295
5-M	12223	12224	12225	12228	12229		12364	12451	12365	12249	12231	12238
5Q-1 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-2 or 84001-6)	30578		30579	14376	14308		14615 14935	13677 14934	30575	30574	30607	30577(10) 5212(16)
5Q-2	30621		30579	14376	14308		14355	12642	30575	30574	30607	11203(10) 30577(10) 5212(16)
5Q2-X	30621		30579	14376	14308		14628	31310	30575	30574		14377(16) 14773(16)
5Q-4	31943 (B) 31944 (C) 31947 (X, A)	31942 (X, A,)	31951 (A, B, C) 31948 (X)	31267	31268		14355	31310	30575	30574	31945	31946
5Q-5 With Tone Control	32821		32824	14376	32825		32905	32904	32818	34146	32911	32240
5Q-5 No Tone Control	32821		32824	14376	32825		32905	32904	32818		32911	32240
5Q-6 No Tone Control	32821		32824	14376	32825		32924	32922	32818			32851
5Q-8 With Tone Control	32822 (A, C) 32823 (X)		32707 (A, C) 31296 (X)	14376	14308		31484	32926	30575	34224	30607	30577(10) 5212(16)
5Q-8 No Tone Control	32822 (A, C) 32823 (X)		32707 (A, C) 32931 (X)	14376	32825		32029	32926	32818			32826

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
5Q-12	32822 (A, C) 32823 (X)		32707 (A, C) 32931 (X)	14376	32825		32905	32934	32818	34247	32852	32240
5Q-55 With Tone Control	30578		30579	14376	14308		14615 14935	14934	30575	30574	30607	30577(10) 5212(16)
5Q-55 No Tone Control	32821		32824	14376	32825		32905	32904	32818		32911	32240
5Q56 With Tone Control	30578		30579	14376	14308		14615 14935	14934	30575	30574	30607	30577(10) 5212(16)
5Q56 No Tone Control	32821		32824	14376	32825		32905	32904	32818		32911	32240
5-T (Spkr. No. RL63C-1) (Spkr. No. 72203-5)	12648		12649	13106	13107		11253 4818	12642 9533	13144	11460	12644	11240 32240
5T-1	12648		12649	13106	13107		13678	13677	13144	13664	12644	11240(10) 5212(16)
5T-4	13587 (X, A) 13589 (C)	13588 (X, A)	12798 (A, C) 13590 (X)	12652	12653		11253	12642	13144		13392	11240(10) 5212(16)
5T-5	12797		12798	12801	12653		11253	12642	13144		13392	11240(10) 5212(16)
5T-6	12648		12649	13106	13107		13823	13821	13144	13813	12644	11240(10) 5212(16)
5T-7	12648		12649	13106	13107		13823	13821	13144	13813	12644	11240(10) 5212(16)
5T-7-O	12648		12649	13106	13107		13823	13821	13144	13813	12644	11240(10) 5212(16)
5T-8	12648		12649	13106	13107		13823	13821	13144	13813	12644	11240(10) 5212(16)
5-U	12797		12798	12801	12653		11253	12642	13144		13392	11240(10) 5212(16)
5-X (Spkr. No. M80864-1) (Spkr. No. M80864-2 Adj. Wave Trap	12495		12496	12403	12407		12500 13151	12498 13148	12394			12398
5-X (Spkr. No. M80864-1) (Spkr. No. M80864-2) Fixed Wave Trap	12495		12496	12403	12407		12500 13151	12498 13148	12394			13837
5XA 5XA-3 5XA-4 Spkr. No. M80864-1 Spkr. No. M80864-2	12495		12496	12801	12407		12500 13151	12498 13148	12394			12398
5X-2	12495 12680		12496	12403	12676		11828	12642	12394			12677
5X-3 (Spkr. No. M80864-1) 5X-4 (Spkr. No. M80864-2)	12495		12496	12403	12407		12500 13151	12498 13148	12394			12398
5X5I 5X5W	32572			33319	33057		32964		32578			33321
AVR-5A	6631 (150-410 K.C.) 6634 (540-1500 K.C.) 6637 (1500-4000 K.C.) 6640 (4000-10000 K.C.) 6643 (8000-18000 K.C.)	6632 (150-410 K.C.) 6635 (540-1500 K.C.) 6638 (1500-4000 K.C.) 6641 (4000-10000 K.C.)	6633 (150-410 K.C.) 6636 (540-1500 K.C.) 6639 (1500-4000 K.C.) 6642 (4000-10000 K.C.) 6644 (8000-18000 K.C.)	6890	6891	6608	6605		6612	6892	9042	6889
T5-2	5051		5050	4900	11477		4893	9588	4429	4905	4897	7790
6BK 6BK-6	12797		12798	12801	12802	12803		12667	11589	12795	12816	12804
6BT 6BT-6	12797		12798	12801	12802	12803		12642	11589	12795	12816	12804
6K	12648		12649	13106	13107		11253	12667	13144	12668	11999	11240
6K-1	12648		12649	13106	13107		11253	12667	13144	13681	12644	11240
6K-2	11617		11618	11388	11389		11253	11258	13144	12668	11848	11240
6K-2 1-F With Magnetite Core Transformers	11617		11618	13106	13107		11253	12667	13144	12668	11848	5212
6K-3	11617		11618	13106	13107		11253	12667	13144	13681	11458	11387(10) 11240(10) 5212(16)
6K-10	11617		11618	11388	11389		11253	11258	13144	12668	11848	11240
6M	12223	12224	12225	12228	12229		12230	12451	12240	12249	12231	12234
6M-2	12223	12224	12225	12228	12229		12230	12523	12240	12249	12231	12234

REPLACEMENT PARTS GUIDE (Continued)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
6Q-1	33762	33763	32824	33428	14308		32905	33777	33814	33815	31733	33014
6Q-4	33762 (A, B, C) 32823 (X)	33763 (A, B, C) 33765 (X)	33764 (A, B, C) 31296 (X)	33759	33761		32905	33777	33814	33816	31733	33014
6Q-4X	33762 (A, B, C) 32823 (X)	33763 (A, B, C) 33765 (X)	33764 (A, B, C) 32931 (X)	33759	33761		33826	33962	33951	33816		33824
6Q-7	32821		32824	14376	32825		32905	32934	32928		32911	32240
6Q-8	32822 (A, C) 32823 (X)		32707 (A, C) 32931 (X)	14376	32825		32905	32934	32928		32911	32240
6QU	32821		32824	14376	32825		32905	32934	33533	33533	32911	32240
6T	12648		12649	13106	13107		11253	12642	13144	12668	11999	11240
6T-2	11617		11618	11388	11389		11253	11235	13144	12668	11848	11240
6T-5	12797		12798	12801	12653		11253	12642	13144		12644	11240(10) 5212(16)
6T-10	11617		11618	11388	11389		11253	11235	13144	12668	11848	11240
HF-6	31669 (A) 31670 (B)	31672 (A) 14952 (B)	31689 (A) 31690 (B)	31746	31749 31747 (3rd)		31687	31721	31682		31691	14377(16) 5212(16)
	31671 (C) 31673 19 meter	14953 (C) 14954 19 meter	31255 (C) 31688 19 meter 31254 25 meter		31748 (4th)							14531
T6-1	11617		11618	11388	11389		11253	11235	13144	11460	11458	11240
T6-1 With Metal Rectifier	11617		11618	11388	11389		11253	11235	13144	11460	11848	11240
C6-2	11617		11618	11388	11389		11253	11258	13144	11460	11458	11240
C6-2 With Metal Rectifier	11617		11618	11388	11389		11253	11258	13144	11460	11848	11240
BT6-3	11590		11463	11592	11593	11594		9539	11589	11588		11595
BC6-4	11590		11463	11592	11593	11594		9432	11589	11588		11595
BT6-5	11639		11640	11592	11593	11594		9539	11589	11644		11387
BC6-6	11639		11640	11592	11593	11594		9432	11589	11644		11203
T6-7	11617		11618	11388	11389		11828	11235	11237			5212
C6-8	11617		11618	11388	11389		11828	11258	11237			5212
T6-9	11462		11463	11388	11389		11253	11235	11459	11460	11458	11240
BT6-10	11590		11463	11592	11593	11594		9539	11589	11588		11595
T6-11	11462		11463	12002	12003		11253	11235	12000		11999	11240(10) 5212(16)
C6-12	11462		11463	12002	12003		11253	11258	12000		11999	11240(10) 5212(16)
7K	12708		12709	12652	12653		11253	12667	13144	12668	11999	11240
7K-1	11617		11618	13106	13107		11253	12667	13144	13681	11458	5212
7T	12708		12709	12652	12653		11253	12642	13144	12668	11999	11240
7T-1	11617		11618	13106	13107		11253	12642	13144	13681	11458	5212
7U	11617		11618	11388	11389		11253	11258	13144 11695 Phono	12668	11848	11240
7U-2	11617		11618	13106	13107		11253	12667	13144	12668	11848	11240(10) 11387(10) 5212(16)
7X 7X-1	12708		12943	12801	12653		11828	12642	13144	12668		5212
BC7-9 BT7-8	4430		4432	4431	7840 4538 (3rd)	4533		9432 9539	11338	5053		11344
C7-6	11600	11601	11602	11388	11389		11253	11258	13144	11392	11384	11240
C7-14	11617		11618	11388	11389		11253	11258	13144	11460	11848	11240
D7-7	11600	11601	11602	11388	11389		11253	11258	13144 11695 Phono	11392	11384	11240
T7-5 (Spkr. No. RL63-4 (Spkr. No. 76365-1) (Spkr. No. 76365-3)	11600	11601	11602	11388	11389		11253 11837 11843	11235 11836 11838	13144	11392	11384	11240(10) 11387(10) 5212(18)
T7-12	11617		11618	11388	11389		11253	11235	13144	11460	11848	11240
8BK 8BK-6	12708		12943	12945	12945 12949 (3rd)	12944		12667	11589	11219	12816	12804

INSIST ON GENUINE RCA VICTOR REPLACEMENT PARTS

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
8BT 8BT-6	12708		12943	12945	12945 12949 (3rd)	12944		12642	11589	11219	12816	12804
8K 8K-1	12708		12709	12652	12653		11253	12667	13144	12668	11999	11240
8K-11	12061	12062	12063	11388	11389		11253	11258	13144	11392	11805	11240
8M	30639		30636	14376	30672		30783	30782	30628		30633	30634
8M-1	30793		30792	30796	30483		30795	30804	13420		30799	30797
8M-2	30793		30792	30796	30483		30795	30808	12365	12249	30799	30797
8M-3	30793		30792	30796	30483	12230		12451	13711	12249	30827	14902
8M-4 (Spkr. No. 72947-1) (Spkr. No. 72947-22)	30793		30792	30796	30483	12230		13796 30834	13711		30827	30829
8Q-1	31780	31781	31782 (A) 31783 (B, C)	31267	31268		14355	31310	31450	31807		5212
8Q-2	33762	33763	32824	32263	14308		14534	34274	33814	33815	31733	33014
8Q-4	31810	31811	31782 (A) 31783 (B, C) 31812 (X)	31063	31064 31268 (3rd)		14355	31828	31450	31546		
8QB	31780	31781	31782 (A) 31783 (B, C)	31779	31779 31268 (3rd)		31784	31310	31776	31777	31998	31778
8QBK	31780	31781	31782 (A) 31783 (B, C)	31779	31779 31268 (3rd)		31784	31275	31776	31777	31998	31778
8T	12708		12709	12652	12653		11253	12642	13144	12668	11999	11240
8T-2 (Spkr. No. R663-4) (Spkr. No. 76365-1) (Spkr. No. 76365-3) (Spkr. No. RL-63E-2)	12061	12062	12063	11388	11389		11253 11837 11843 11253	11235 11836 11838 12642	13144	11392	11805	5212
8T-10	12708		12709	12652	12653		11253	12642	13144	12668	11999	11240
8-T11 (Spkr. No. RL63-4) (Spkr. No. 76365-1) (Spkr. No. 76365-3)	12061	12062	12063	11388	11389		11253 11837 11843	11235 11836 11838	13144	11392	11805	5212
8U	12061	12062	12063	11388	11389		11253	11258	13144 11695 Phono	11392	11803	5212
8U-2	12061	12062	12063	11388	11389		11253	11258	13144 11695 Phono	11392	11803	5212
HF-8	31669 (A) 31670 (B) 31671 (C) 31673 (49, 31, 25, 19 meter)	31672 (A) 14952 (B) 14953 (C) 14954 (49, 31, 25, 19 meter)	31689 (A) 31690 (B) 31255 (C) 31688 (19 meter) 31254 (25 meter)	31746	31749 31747 (3rd) 31748 (4th)		31685	31721	31682		31674	11203(10) 14377(16) 5212(16)
C8-15	5245 (B) 5215 (A, C)	5246 (B) 5216 (A, C)	5247 (B) 5217 (A, C)	11216	11239		11253	11258	13144	11238	11241	11240
C8-17	11325 (X) 5215 (A, C)	11326 (X) 5216 (A, C)	11327 (X) 5217 (A, C)	11216	11239		11253	11258	13144	11238	11241	11240
C8-19 C8-20	11600	11601	11602	11388	11389		11253	11258	11232		11803	11240(10) 11387(10) 5212(16)
CV-8											14420	13046
D8-28	11600	11601	11602	11388	11389		11253	11258	13144 11695 Phono	11302	11803	11240
PSU-8A											31733	11203
PSU-8B											31734	11203
PSU-8C											31735	11203
PSU-8E											32062	32048(5) 32047(20) 32045(15)
T8-14 (Spkr. No. RL63-4) (Spkr. No. 76365-1) (Spkr. No. 76365-3)	5245 (B) 5215 (A, C)	5246 (B) 5216 (A, C)	5247 (B) 5217 (A, C)	11216	11239		11253 11837 11843	11235 11836 11838	13144	11238	11241	11240(10) 5212(18)
T8-16 (Spkr. No. RL63-4) (Spkr. No. 76365-3)	11325 (X) 5215 (A, C)	11326 (X) 5216 (A, C)	11327 (X) 5217 (A, C)	11216	11239		11253 11843	11235 11838	13144	11238	11241	11240(10) 5212(16)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
T8-18 (Spkr. No. RL63-4) (Spkr. No. 70283-1)	11600	11601	11602	11388	11389		11253	11235 11258	11237		11803	11240(10) 11387(10) 5212(16)
U-8	33736		32962	32966	32967		33465	32904	33504	33467		32576
9-K	12923	12924	12709 (A, B, C) 12881 (X)	12652	12653		11253	12667	12861	12921 (H.F.) 12860 (L.F.)	12918	5212(16) 12467(30)
9K-1	12708	13654	12709	12652	12653		11253	12667	13647	13649	12918	5212(16) 12467(30)
9K-2	12879 (X, A, B, C) 12888 (D)	12889 (D) 12880 (X, A, B, C)	12709 (A, B, C) 12881 (X) 12890 (D)	12652	12653		12913	12667	12861	12860 (L.F.) 12862 (H.F.)	12856	5212(16) 12872(20) 12467(30)
9K-3	12708	13654	12709	12652	12653		12913	12667	12861	12921 (H.F.) 12860 (L.F.)	11211	5212(16) 12467(30)
9K-10	12879 (X, A, B, C) 12888 (D)	12889 (D) 12880 (X, A, B, C)	12709 (A, B, C) 12881 (X) 12890 (D)	12652	12653		12913	12667	12861	12860 (L.F.) 12862 (H.F.)	12856	5212(16) 12872(20) 12467(30)
9M-1 (Spkr. No. 84391-1) (Spkr. No. 84391-3)	31766 31977 (Filter)		31594	14376	30672		30783 31772	30782 31771	31637		31597	31598
9M-2 (Spkr. No. 84391-1) (Spkr. No. 84391-3)	31601 31977 (Filter)	31600	31595	30957	31593		30783 31772	30782 31771	31638		31597	31599
9SX-1 9SX-2 9SX-3 9SX-4 9SX-5 9SX-6 9SX-7 98X-8	32387 32389 (S.W.)		32388	32382	32383		32381		32385			32386
9T	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12652	12653			12642	12861	12860 (L.F.) 12862 (H.F.)	12856	5212(18) 12467(30)
9TX-1 9TX-2 9TX-3	32572		32573	32574	32534		32581		32578			32576
9TX-4 9TX-5	32572		32573	32574	32534		32581		32580			32576
9TX-21 9TX-22	32572		32573	32574	32534		32581		32578			32576
9TX-23	32572		32573	32574	32534		32581		33291			32576
9TX-31 9TX-32	32572		32962	32966	32967		32964		32578			32576
9TX-33	32572		32962	32966	32967		32964		33291			32576
9TX-50 9TX-50M			32962	32966	32967		33741		33291			32576
9U	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12652	12653		12913	12667	13126 (Phono)	12860 (L.F.) 13468 (H.F.)	12856	5212(18) 12467(30)
9U-2	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12652	12653		12913	12667	13126 (Phono)	12860 (L.F.) 13468 (H.F.)	12856	5212(18) 12467(30)
9X 9X-1 9X-2 9X-3 9X-4	31316	30876					31317	31325	31322			31323
9X- 6 9X-11 9X-12 9X-13 9X-14	30875	32027					32029	31325	32026			31323
C9-4 Metal Rectifier Glass Rectifier	5215 (A, C) 5245 (B)	5216 (A, C) 5246 (B)	5217 (A, C) 5247 (B)	11216	11239		11253	11258	11237	11238	11330 11803	11240(10) 5212(18)
C9-6	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11239		11253	11258	11237	11238	11243	11240(10) 5212(18)
CV-9											32221	32222
D9-19	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11239		11253	11258	11237	11238	11243	11240(10) 5212(18)
D9-19 With Metal Rectifier	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11239		11253	11258	11237	11238	11805	11240(10) 5212(18)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
T9-7	11600	12059	11602	11388	11389	12081	12080	11235	11237	11392		12055(16) 12056(10)
T9-8	12061	12062	12063	11388	11389	12081	12080	11235	11237	11392		12055(16) 12056(10)
T9-9	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11239		11253	11235	11237	11238	11243	11240(10) 5212(18)
T9-10	5215 (A, C) 5245 (B)	5216 (A, C) 5246 (B)	5217 (A, C) 5247 (B)	11216	11239		11253	11235	11237	11238	11803	11240(10) 5212(18)
10K 10K-11	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 12982 (3rd)		13289	13291	12861	12860 (L.F.) 12979 (H.F.)	12856	5212(18) 12467(30)
10K-1	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 12982 (3rd)		13661	12667	12861	12860 (L.F.) 12979 (H.F.)	11211	5212(18) 12467(30)
10Q-1	31780	31781	31782 (A) 31783 (B, C)	31779	31779 31268 (3rd)		14534	31310	31450	31807		5212(16)
10T, 10T-11 (Spkr. No. RL63D2) (Spkr. No. RL63E1)	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 12982 (3rd)		13289 13661	13290 12642	12861	12860 (L.F.) 12979 (H.F.)	12856 11211	5212(18) 12467(30)
PSU-10A											31736	11203(10) 14531(25)
PSU-10B											31737	11203(10) 14531(25)
PSU-10C											31738	11203(10) 14531(25)
PSU-10E											32063	32048(5) 32045(15)
T10-1 (Spkr. No. RL63-5) (Spkr. No. 76365-2)	5215 (A, C) 5245 (B)	5216 (A, C) 5246 (B)	5217 (A, C) 5247 (B)	11216	11217	11218	11229 11840	11235 11838	11205	11219	11211	11203(10) 5212(18)
T10-3 (Spkr. No. RL63-5) (Spkr. No. 76365-2)	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11217	11218	11229 11840	11235 11838	11205	11219	11213	11203(10) 5212(18)
11Q-4	31839 (B, C) 31838 (X, A)	31841 (B, C) 31840 (X, A)	31257 (A) 31690 (B) 31255 (C) 31837 (X)	31864	31865 31268 (3rd)		14534	31310	31836		31308	5212(16) 31495(20)
11QK	31839 (B, C) 31838 (X, A)	31841 (B, C) 31840 (X, A)	31257 (A) 31690 (B) 31255 (C) 31837 (X)	31864	31865 31268 (3rd)		14534	31275	31836		31308	5212(16) 31495(20)
11QU	31839 (B, C) 31838 (X, A)	31841 (B, C) 31840 (X, A)	31257 (A) 31690 (B) 31255 (C) 31837 (X)	31864	31865 31268 (3rd)		14534	31275	31836		31308	31866(16) 31495(20)
C11-1	5215 (A, C) 5245 (B)	5216 (A, C) 5246 (B)	5217 (A, C) 5247 (B)	11216	11217	11218	8057	8056	11205	11219 (H.F.) 5224 (L.F.)	11211	11203(10) 5212(18)
D11-2	5215 (A, C) 11325 (X)	5216 (A, C) 11326 (X)	5217 (A, C) 11327 (X)	11216	11217	11218	8057	8056	11205	11219 (H.F.) 5224 (L.F.)	11213	11203(10) 5212(18)
C11-3	5215 (A, C) 5245 (B)	5216 (A, C) 5246 (B)	5217 (A, C) 5247 (B)	11216	11217	11218	8057	8056	11205	11219 (H.F.) 5224 (L.F.)	11211	11203(10) 5212(18)
T11-8	11325 (X) 5215 (A, C)	11326 (X) 5216 (A, C)	11327 (X) 5217 (A, C)	11216	11217	11218	11229	11235	11205	11219	11213	11203(10) 5212(18)
12Q-4 12Q-K 12Q-U	31845 (A) 14941 (B) 14950 (C) 31892 (X) 14951 (49, 31, 25, 19 meter)	31891 (A, X) 14952 (B) 14953 (C) 31846 (49, 31, 25, 19 meter)	31257 (A) 31890 (B, 49 meter) 31255 (C, 31 meter) 31812 (X) 31852 (19 meter) 31254 (25 meter)	31746	31749 31268 (3rd)		31847	31275	31848	31850		5212
U-12	33722		33733	33722	33895		33599	32934	33776	33894	34261	32342
13K	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 12982 (3rd)	13023	13007	12474	13014	13015 (Fidelity) 13013 (Music Speech)	13008	11203(10) 5212(18)
C13-2	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5220 (X, B) 5221 (D)	5228	11206 5230 (3rd)	5232 5234 (Inter-stage)	8057	8056	11205	5222	8061	11203(10) 5212(18)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
C13-2 (With Metal Rectifier) C13-3	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5220 (X, B) 5221(D)	5228	11206 5230 (3rd)	5232 5234 (Inter-stage)	8057	8056	11205	5222	11880	11203(10) 5212(18)
15K	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 13019 (3rd) 13020 (Magic eye)	13023	13007	12474	13014	13015 (Fidelity) 13013 (Music Speech)	13008	11203(10) 5212(18)
15U	12879 (X, A, B, C) 12888 (D)	12880 (X, A, B, C) 12889 (D)	12709 (A, B, C) 12881 (X) 12890 (D)	12981	12990 12982 (3rd)	12464	12568	12474	12861	13616	12463	11240(10) 11496(18) 12467(30)
C15-3	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5220 (X, B) 5221 (D)	5228	5229 5230 (3rd) 5231 (4th)	5232 5234 (Inter-stage)	8057	8056	5223	5224 (L.F.) 5222 (H.F.)	8061	11203(10) 5212(18)
C15-3 (With Metal Rectifier) C15-4	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5220 (X, B) 5221 (D)	5228	5229 5230 (3rd) 5231 (4th)	5232 5234 (Inter-stage)	8057	8056	5223	5224 (L.F.) 5222 (H.F.)	11880	11203(10) 5212(18)
VA-20			32501						32499			32152
D22-1	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5221 (D) 5220 (X, B)	5228	5229 5230 (3rd) 5231 (4th)	11508 (Driver) 5234 (Inter-stage) 11495 (Inter-stage)	11494	8056	5223 11877 (Phono)	5222 11579 (Phono) (Low) 11589 (Phono) (High)	8061 (Pwr. Rec.) 11492 (Filament) 11491 (Plate)	11203(10) 5212(18) 11496(18)
D22-1A	5215 (A, C) 5218 (X, B)	5216 (A, C) 5219 (X, B)	5217 (A, C) 5221 (D) 5220 (X, B)	5228	5229 5230 (3rd) 5231 (4th)	11508 (Driver) 5234 (Inter-stage) 11495 (Inter-stage)	11494	8056	5223 11877 (Phono)	5222 11579 (Phono) (Low) 11589 (Phono) (High)	11880	11203(10) 5212(18) 11496(18)
OSC-22			32501						33794			32576
RK-24			4747				4746					4745
U-25 U-26	32493 (A, B, C)		31951 (A, B, C)	30902	30903		14534	31275	31366	31366	32144	32142
U-30	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	31267	31268		14534	31275	31249	31248	31225	31496(16) 31495(20)
40X-30 40X-31			34259	32966	32967		32964		32578			32576
40X-50 40X-51 40X-52 40X-53 40X-54 40X-55 40X-56 40X-57			32962	32966	32967		32964		32545			32576
BT-40	32572		33055	33056	33057		33062		33059			32187
BT-42	32150		32573	34118	34119		33459		34120	33458		33953
45E 45EM 45EW			34259	32966	32967		33854	33853	33291			33850
K50	33775		33724	33722	33723		33779	31275	33776	33630		32342
M50 (Spkr. No. 84391-1) (Spkr. No. 84391-3)	31977 31977		31594 31594	14261 14261	30672 30672		30783 31772	30782 31771	31637 31637		31597 31597	32240 32240
O50							33407	33406	33215	33212	14796	33214
U50	32821		32824	14376	32825		33407	33406	33409	33409	33112	32240
T55			33724	33722	33723		32905	32904	33631		33112	32342
K60	32821		32824	33428	14308		31301	31275	33425	33424	33112	32240
M60 (Spkr. No. 84391-1) (Spkr. No. 84391-3)	33664	31600	31595	30902	31593		30783 31772	30782 31771	31638		31597	33803
R60							32905	32934	33215	33212	14796	33214
T60	33722		33733	33722	33723		32905	32904	33631	33630	33112	32342

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
M61	32821		32824	14376	32825		32905	32934	32928	32928	32911	32240
T62	33722		33733	33722	33723		32905	32904	33776	33630	33112	32342
T64	32821		32824	33428	14308		32905	32934	33512	33511	33112	32240
67M	13685	13684	12225	13419	13693		13692	13703	13420		13690	13687
67M-1	13685	13712	12225	13419	12229	12230		12451	13711	12249	12231	12234(8) 12238 (Pack)
67M-2	13685	13712	12225	13419	12229	12230		13796	13711		12231	12234(8) 12238 (Pack)
67M-3	13685	13712	12225	13419	12229	12230		(Dash Spkr.) 13796 (Header Spkr.) 9708	13711		12231	12234(8) 12238 (Pack)
M-70	31601	31600	32977	32990	39991	32243	32241	33017	32978	32978	32986	32240
K-80	32821		32824	33428	14308		33444	31275	33425	33424	33112	33014
T-80	32821		32824	33428	14308		33599	32934	33512	33511	33112	33014
M-81	31780	31781	31782 (A) 31783 (B, C)	31267	31268		14996	14602	31450	31807		5212
M-82	31780	31781	31782 (A) 31783 (B, C)	31267	31268		14996	14602	31450	31807		5212
M-83	31780	31781	31782 (A) 31783 (B, C)	31267	31268		14996	14602	31450	31807		5212
84BT (Spkr. No. 76474-3)	14285		14257	14261	14283		14304	14303	14282			
84BT-6 (Spkr. No. 76494-2)	14285		14257	14261	14308		14306	14305	14307		14311	13046
M-84	31780	31781 (R.F.)	31782 (A) 31783 (B, C)	31267	31268		31828	14355	31450	31807		5212
85BK 85BT	14372		14373	14261	14283	12803		12642	14400	14401		
85BT-6	30659		14647	14376	14642		30663	30664	30658		30656 30665	30657
85E	14646		14647	14376	14642		14615	14614	14645		30607	14814(10) 14813(16)
85K	14646		14647	14376	14642		14615	14614	14645		30607	11203(10) 5212(16)
85T (Spkr. No. 84011-3) (Spkr. No. 84011-6)	14670		14257	14376	14642		14677 14940	14676 14939	14645		14666	14669
85T-1 (Spkr. No. 84010-3) (Spkr. No. 84010-1)	14646		14647	14376	14642		14680 14942	14679 14941	14645		14655	11203(10) 5212(16)
85T-2 (Spkr. No. 84128-2) (Spkr. No. 84128-1)	14670		14257	14376	14642		30472 30686	30471 30687	14645		14666	14669
85T-5	12797		12798	12801	12653		14355	12642	14335		13392	11240(10) 5212(16)
85T-8	30621		30579	14376	14308		14355	12642	30575	30574	30617	30577 (Pack) 5212(16)
86BK	14372	14414	14373	14261	14283	12803		12667	14335	14401		14403
86BT	14372	14414	14373	14261	14283	12803		12642	14335	14401		14403
86E 86K	14372		14373	14376	14283		14355	12667	14335	14371	14367	11240(10) 5212(16)
86K-7	14372		14373	14376	14283		14355	12667	14335	14371	14367	11240(10) 5212(16)
86T (Spkr. No. 84001-3) (Spkr. No. 84001-6)	14372		14373	14376	14283		14615 14935	14614 14934	14335	14371	14367	11240(10) 5212(16)
86T-1 (Spkr. No. 84001-3) (Spkr. No. 84001-6)	14372		14373	14376	14283		14615 14935	14614 14934	14335	14371	14367	11240(10) 5212(16)
86T-2 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-3 or 84001-6)	30578		30579	14376	14308		14615 14935	14614 14934	30575	30574	30617	30577(10) 5212(16)
86T-3 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-2 or 84001-6)	30578		30579	14376	14308		14615 14935	14614 14934	30575	30574	30617	30577(10) 5212(16)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
86T-4	13587 (X, A) 13589 (C)	13588 (X, A)	13590 (X) 12798 (A, C)	12652	12653		14355	12642	14335	14538	13392	11203(10) 5212(16)
86T-6 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-2 or 84001-6)	30578		30579	14376	14308		14615 14935	13677 14934	30575	30574	30607	{ 11203(10) 5212(16)
86T-44	13587 (X, A) 13589 (C)	13588 (X, A)	13590 (X) 12798 (A, C)	12652	12653		14615	14614	14335	14538	13392	11203(10) 5212(16)
86X (Spkr. No. 84003-3) (Spkr. No. 84003-4)	14646		14647	14376	14642		14683 14937	14682 14936	14645			{ 14643(20) 14644 (Pack)
86X-4	30292 (X, A, C)		30293 (A, C) 30294 (X)	14376	14308		30307	30306	14645	30299		30298(16) (Pack) 30297(32)
87EY	14372		14373	14376	14283		14628	12667	14335	14371		14624(10) 14621(32) 14622(16)
87K	14372		14373	14376	14283		14355	12667	14335	14371	14367	11240(10) 5212(16)
87K-1 } 87K-2 }	30745		30746	14376	14283		14355	12667	30743	30743	30607	30577(10) 5212(16)
87T (Spkr. No. 84001-3) (Spkr. No. 84001-6)	14372		14373	14376	14283		14615 14935	14614 14934	14335	14371	14367	{ 11240(10) 5212(16)
87T-1 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-2 or 84001-6)	30578		30579	14376	14308		14615 14935	14614 14934	30575	30574	30617	{ 30577(10) 5212(16)
87T-2 (Spkr. No. 84091-1 or 84001-3) (Spkr. No. 84091-2 or 84001-6)	30745		30746 (A, B, C)	14376	14283		14615 14935	14614 14934	30743	30743	30607	{ 30577(10) 5212(16)
87X	14372		14373	14376	14283		14686	14685	14335	14371		14624(10) 14621(32) 14622(16)
87Y	14372		14373	14376	14283		14628	12667	14335	14371		14624(10) 14621(32) 14622(16)
88K	14372	14414	14516	14376	14283		14355	12667	14335	14371	14511	11203(10) 5212(16)
88U } 88U-2 }	14372	14414	14516	14376	14283		14996	14602	14597 30129 (Phono)	14371	14994	11240(10) 5212(16)
R-89							31203	31202	31889			31323
R-91							31588	31587	31582			31584
91B	6820	6821						9471	6829			6832(40)
R-92						6551	6556		4401		9026	4498(8) 7590(10)
94BK	30950		30895	30948	30903		30974	30973	30947			13610(8)
94BK-1	32150		32148	14261	14308		30974	30973	30947			32187
94BK-2	32258		32254 (A) 32260 (S.W.)	32263	32264		32272	32274	32262			31323
94BP-4 94BP-4B 94BP-4C 94BP-4R			32148	32263	32264		32164	32163	32594			32187
94BP-61 94BP-62 94BP-64 94BP-66 94BP-80 94BP-81			33055	33301	33302		33062		33304			33303
94BT	30950		30895	30948	30903		30971	30970	30947			13610
94BT-1	32150		32148	14261	14308		32164	32163	30947			32187
94BT-2	32258		32254 (A) 32260 (S.W.)	32263	32264		32272	32271	32262			31323
94BT-6	30950		30895	30957	30903		30971	30970	30958		30960	30961
94BT-61	30950		32148	14261	14308		32164	32163	30958		32151	32152
94X	30875	30876					30944	30943	30874			30873
94X-1 } 94X-2 }	30875	30876					30979	30943	30874			30873
95T } 95T-1 }	30894		30895	30902	30903		30941	30940	30891		30888	30898

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
95T-5 (RC-348) (RC348-MOD)	30894		31098	30957	30903		31474	31473	31412		31408	31423
95T5 (RC348-M)	32338		31098	30957	30903		31474	31473	31412		31408	32341
95T5LW	32218		31098	30902	30903		31474	31473	31412		31410	31423
95X 95X-1	30875	30876					31203	31202	31194			30873
95X-6 95X-11	30875	30876					31203	31202	31966			31323
95XL	30875	30876					31203	31202	31192			30873
95XLW	32213	32214					31203	31202	31194			31323(16) 31584(40)
R-95							11828	11235				11867
96BK-6	32258		32254 (A) 32366 (C)	14261	14308		32368	32328	32367	30953		
96BT-6 96BT-6A	32258		32254 (A) 32366 (C)	14261	14308		32368	32326	32367	30953		
96E (RC348C) (RC348C-MOD)	30894		31098	30957	30903		31444	31443	31413	31413	31380	31424
96E (RC348C-M)	32338		31098	30957	30903		31444	31443	31413	31413	31380	32342
96E-2	32493		31951 (A, B, C)	30902	14283		14355	31310	32668	32668	31380	32485
96K (RC351)	31378		31377 (A, C)	30957	30903		31301	31275	31366	31366	31380	31371
96K (RC351-M)	31378		31377 (A, C)	30957	30903		31301	31275	31366	31366	31380	32485
96K (RC351-R)	32488		32489 (A, C)	14376	14283		31301	31275	31366	31366	31380	32485
96K2 (RC351-B)	31402		31401 (A, B, C)	30957	30903		31301	31275	31366	31366	31380	31371
96K2 (RC351B-M)	31402		31401 (A, B, C)	30957	30903		31301	31275	31366	31366	31380	32485
96K2 (RC351B-R)	32493		31951 (A, B, C)	14376	14283		31301	31275	31366	31366	31380	32485
96K-5 96K-6	32493		31951 (A, B, C)	30902	14283		14355	31275	32668	32668	31380	32485
96T (RC348A) (RC348A-MOD)	30894		31098	30957	30903		31477	31476	31413	31413	31380	31424
96T (RC348A-M)	32338		31098	30957	30903		31477	31476	31413	31413	31380	32342
96T-1 (RC348D) (RC348D-MOD)	30894		31098	30957	30903		31477	31443	31413	31413	31380	31424
96T-1 (RC348D-M)	32338		31098	30957	30903		31477	31443	31413	31413	31380	32342
96T-2 (RC351)	31378		31377 (A, C)	30957	30903		31444	31443	31366	31366	31380	31371
96T-2 (RC351-M)	31378		31377 (A, C)	30957	30903		31444	31443	31366	31366	31380	32485
96T-2 (RC351-R)	32488		32489 (A, C)	14376	14283		31444	31443	31366	31366	31380	32485
96T-3 (RC351-B)	31402		31401 (A, B, C)	30957	30903		31444	31443	31366	31366	31380	31371
96T-3 (RC351B-M)	31402		31401 (A, B, C)	30957	30903		31444	31443	31366	31366	31380	32485
96T-3 (RC351B-R)	32493		31951 (A, B, C)	14376	14283		31444	31443	31366	31366	31380	32485
96T-4 96T-4W 96T-5	32706		32707	14376	14308		32717	32716	31413	31413		32708
96T-6	32706		32707	14376	14308		32720	32719	31413	31413		32708
96T-7 96T-7W (Spkr. No. 84308-4) (Spkr. No. 84308-1)	32493		31951 (A, B, C)	30902	14283		32920 31444	32918 31443	32668	32668	31380	32485

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
96X-1 96X-2 96X-3 96X-4 96X-11 96X-12 96X-13 96X-14	32531		32532	32533	32534		31203	31202	32545			32548
R-96							14355	12642	14798	14797	14796	11203(10) 5212(16)
97E (RC351H)	31402		31401 (A, B, C)	30957	30903		14355	31310	31366	31366	31380	31371
97E (RC351H-M)	31402		31401 (A, B, C)	30957	30903		14355	31310	31366	31366	31380	32485
97E (RC351H-R)	32493		31951 (A, B, C)	14376	14283		14355	31310	31366	31366	31380	32485
97K (RC351F)	31378		31377	30902	30903		31301	31275	31366	31366	31380	31371
97K (RC351F-M)	31378		31377	30902	30903		31301	31275	31366	31366	31380	32485
97K (RC351F-R)	32488		32489	14376	14283		31301	31275	31366	31366	31380	32485
97K-2	32493		31951 (A, B, C)	30902	14283		14355	31275	32668	32668	31380	32485
97KG (RC351A)	31402		31401 (A, B, C)	30957	30903		31301	31275	31366	31366	31380	31371
97KG (RC351A-M)	31402		31401 (A, B, C)	30957	30903		31301	31275	31366	31366	31380	32485
97KG (RC351A-R)	32493		31951 (A, B, C)	14376	14283		31301	31275	31366	31366	31380	32485
97T (RC351A)	31402		31401 (A, B, C)	30957	30903		31444	31443	31366	31366	31380	31371
97T (RC351A-M)	31402		31401 (A, B, C)	30957	30903		31444	31443	31366	31366	31380	32485
97T (RC351A-R)	32493		31951 (A, B, C)	14376	14283		31444	31443	31366	31366	31380	32485
97T2 (Spkr. No. 84308-1) (Spkr. No. RL-79-1)	32493		31951 (A, B, C)	30902	14283		31444 32905	31443 32934	32668	32668	31380	32485
97X (RC349) (RC349-MOD)	30894		31098	30957	30903		31484	31486	31413	31413		31479
97X (RC349-M)	32338		31098	30957	30903		31484	31486	31413	31413		31479
97Y (RC352A)	31402		31401	30957	30903		14628	31275	31366	31366		31576
97Y (RC352A-M)	31402		31401	30957	30903		14628	31275	31366	31366		32485
97Y (RC352A-R)	32493		31951	14376	14283		14628	31275	31366	31366		32485
R-97							14355	12642	14798	14797	14796	11203(10) 5212(16)
98K	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Top) 31267 (Bklte. Top) 32068	(Metal Top) 31268 (Bklte. Top) 14283		31301	31275	31454	31248	31298	11203(10) 5212(16)
98K-2	32493		31951	14376	14283		14534	31275	32668	32668	32144	32145
98T	32493		31951	14376	14283		32690	32688	32668	32668	32144	32145
98T2	32493		31951	14376	14283		31666	31665	32668	32668	32144	31576
98X 98EY 98YG (RC352)	31402		31401	30957	30903		31666 14628 14628	31665 31310 31275	31366	31366		31576
98X 98EY 98YG (RC352-M)	31402		31401	30957	30903		31666 14628 14628	31665 31310 31275	31366	31366		32485
98X 98EY 98YG (RC352-R)	32493		31951	14376	14283		31666 14628 14628	31665 31310 31275	31366	31366		32485
R-98						13964	33405	33648	33398	33396 (H.F.) 33397 (L.F.)	14271	11496(18) 14531(25)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
99K (Spkr. No. RL-70-H2) (Spkr. No. RL-70-E2)	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534 14534	31275 12667	31450	31248	31225	5212(16) 14531(25)
99T	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534	31310	31450	31248	31225	5212(16) 14531(25)
R-99						12464	12568	12474	12554	12553	12463	11240(10) 11496(18) 12467(30)
R-99 (With input pack)						13964	12568	12474	14026	12553	12463	11203(10) 11496(18) 12467(30)
M-101	4950	6966	6967	4951	4952		4957	9602	5018		7859	4961
U-101	14646		14647	14376	14642		14355	12642	14826 14815 (Phono)		14655	14814(10) 5212(16) 14377(16)
102		6820 (R.F.) 6821						9471	3542			6823
U-102E	14646		14647	14376	14642		14355	12667	14826 14815 (Phono)		30607	14814(10) 14813(16)
103	6666		6664	6662	6663		4803	9588	6667	6669	9464	6661
U-103	14646		14647	14376	14642		14355	12667	14826 14815 (Phono)		14655	14814(10) 5212(16) 14377(16)
M-104	4950	6966	6967	4951	4952		4957	9602	5018		7859	4961(8)
U-104	30875	30876					31203	31202	31966 32209 (Phono)			31323(16)
M-105	6731	6540	6471	3636	3637	6732	3688	9023	6499	6490	9049	7600
U-105	14372	14414	14516	14376	14283		14601	14602	14597 14608 (Phono)	14599	11211	5212(16) 14531(25)
U-106	30745		30746 (A, B, C)	14376	14283		14534	12667	30743	30743	30869	5212(16) 14531(25)
M-107	6965	6966	6967	6960	6962		6982	9492	6978		7775	7776
U-107	14372	14414	14516	14376	14283		14601	14602	14597 30098 (Phono)	14599	11211	5212(16) 14531(25)
M-108	4950	6966	6967	4951	4952		4957	9602	5018		7859	4961(8)
U-108	14372	14414	14713	14706	14707 14708 (3rd) 14709 (4th)		12568	14602	14835 14833 (Phono)	14836	14271	11203(10) 11496(18) 14531(25)
M-109	4950	6966	6967	5055	5056	5057	5090	9598	5018	5072	5065	5069
U-109	14372	14414	14713	14706	14707 14708 (3rd) 14709 (4th)		12568	14602	14835 14833 (Phono)	14836 (Fi-delity)	14271	11203(10) 11496(18) 14531(25)
CV-110											31998	32013
ACR-111	14431 (B, C, D, E) 14434 (A)	14434 (A) 14432 (B, C, D, E)	13299 (B. F. O.) 14433 (B, C, D, E) 14435 (A)	12095	12096 12097 (3rd)	13035	11229	12642	13039	14134	11880	13036(25)
CV-111											33783	33810(3-40) 33968(1-20) (1-40)
U-111 (RC-341) (RC-341-MOD)	30894		31098	30902	30903		31111	31110	30891		30888	31099
U-111 (RC-341-M)	32338		31098	30902	30903		31111	31110	30891		30888	31099
112-A	6519	6520	6521	6727			7846	9492	4702			6728
U-112 (RC341C) (RC341C-MOD)	30894		31098	30902	30903		32504	32503	30891		30888	31099

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
U-112 (RC341C-M)	32338		31098	30902	30903		32504	32503	30891		30888	31099
U-115 (RC348E) (RC348E-MOD) (Spkr. No. 84327-1) (Spkr. No. 84327-3)	30894		31098	30902	30903		31477 32588	31443 32586	32355	32355	31380	31424
U-115 (RC348E-M) (Spkr. No. 84327-1) (Spkr. No. 84327-3)	32338		31098	30902	30903		31477 32588	31443 32586	32355	32355	31380	32342
M-116	6742	6743	6745	6740	6741	6759	6764	8987	6746	6747	9456	6844
117	4903		4902	4900	4901		4818	9533	4790	5052	4897	4428(8) 7790(10)
118 (RCA-41 Output)	4430		4432	4431	4433		4472	8935	4429	4426	9511	4428(8) 7790(10)
118 (RCA-42 Output)	5087		5089	4431	4433		4893	9588	4429	5052	9511	4428(8) 7790(10)
119	5051		5050	4900	4901		4893	9588	4429	4905	4897	4428(8) 7790(10)
U-119 (RC351E)	31402		31401 (A, B, C)	30957	30903		31444	31762	31366	31366	31380	31371
U-119 (RC351E-M)	31402		31951 (A, B, C)	14376	14283		31444	31762	31366	31366	31380	32485
U-119 (RC351E-R)	32493		31951 (A, B, C)	14376	14283		31444	31762	31366	31366	31380	32485
U-121 (RC-348J)	32338		31098	30902	30903		31301	31275	32355	32355	31380	32342
U-122E (RC351D)	31402		31401 (A, B, C)	30957	30903		14355	31310	31366	31366	31380	31371
U-122E (RC351D-M)	31402		31401 (A, B, C)	30957	30903		14355	31310	31366	31366	31380	32485
U-122E (RC351D-R)	32493		31951 (A, B, C)	14376	14283		14355	31310	31366	31366	31380	32485
UY-122E (RC352B)	31402		31401 (A, B, C)	30902	30903		14628	31310	31366	31366		31576
UY-122E (RC352B-M)	31402		31401 (A, B, C)	30902	30903		14628	31310	31366	31366		32485
UY-122E (RC352B-R)	32493		31951 (A, B, C)	14376	14283		14628	31310	31366	31366		32485
M-123	6965	6966	6967	6960	6962	6969	6970		6964	6971	7759	7758
U-123-(1 Band)	32338		31098	30902	30903		31301	31275	32355	32355	31380	32342
U-123-(2 Band)	32706		32707	14376	14308		31301	31275	32355	32355	33112	33014
124	6527	6528	6471	6483	6484		6476	9428	6485	6619	9005	6487
U-124 (RC351C)	31402		31401 (A, B, C)	30957	30903		14355	31275	31366	31366	31380	31371
U-124 (RC351C-M)	31402		31401 (A, B, C)	30957	30903		14355	31275	31366	31366	31380	32485
U-124 (RC351C-R)	32493		31951 (A, B, C)	14376	14283		14355	31275	31366	31366	31380	32485
UY-124 (RC352-C)	31402		31401 (A, B, C)	30902	30903		14628	31275	31366	31366		31576
UY-124 (RC352C-M)	31402		31401 (A, B, C)	30902	30903		14628	31275	31366	31366		32485
UY-124 (RC352C-R)	32493		31951 (A, B, C)	14376	14283		14628	31275	31366	31366		32485
125	5087		5089	5102	5103 5105 (3rd)		4893	9588	4429	5052	9511	7790(10) 5101 (Pack)
U-125 (RC386)	31402		31401 (A, B, C)	30902	30903		14534	31275	31366	31366	32144	32142
U-125 (RC386-M)	31402		31401 (A, B, C)	30902	30903		14534	31275	31366	31366	32144	32485
U-125 (RC386-R)	32493		31951 (A, B, C)	14376	14283		14534	31275	31366	31366	32144	32485
126-B	6992		6664	6993	6994	4349			6995	6669		
U-126	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534	31275	31249	31248	31225	31496(16) 31495(20)

INSIST ON GENUINE RCA VICTOR REPLACEMENT PARTS

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
127	6983	6699	6700	6697	6698	6987	6988	9499	6695	6705		3796(4) 6986(8)
U-127-E	32338		31098	30902	30903		14355	31310	32355	32355	31380	32342
128 (1934) Spkr. No. RL-60A-3)	4516 (P.B.) 7803 (B, S.W.)	4514 (P.B.) 7805 (B, S.W.)	7807 (B, S.W.) 4511 (P.B.)	4431	4433		4472	8935	4519	4517	9511	4428(8) 7790(10)
128 (1935) (Spkr. No. 72203-2—with spade terminals) (Spkr. No. 72203-5—with connector terminals)	4808 (B) 7803 (A, C)	4815 (B) 7805 (A, C)	7807 (A, C) 4807 (B)	4431	4433		4818	9533	4809	4810	9511	4428(8) 7790 (10)
128E	4734 (A) 7803 (B, C)	4751 (A) 7805 (B, C)	7807 (B, C) 4733 (A)	4431	4433		4818	9533	4519	4517	9511	4428(8) 7790(10)
U-128 U-129	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534	31275	31249	31248	31225	31496(16) 31495(20)
U-130	31263 (A) 31264 (19, 25, 31, 49 meter)	31265 (A) 31266 (19, 25, 31, 49 meter)	31257 (A) 31258 (19 meter) 31254 (25 meter) 31255 (31 meter) 31256 (49 meter)	31565	31551 31549 (3rd)		31557	31275	31547	31546	31225	31563(16) 31495(20)
U-132	31669 (A) 31670 (B) 31671 (C) 31673 (49, 31, 25, 19 meter)	31672 (A) 14952 (B) 14953 (C) 14954 (49, 31, 25, 19 meter)	31689 (A) 31690 (B, 49 meter) 31255 (C, 31 meter) 31688 (19 meter) 31254 (25 meter)	31746	31749 31747 (3rd) 31748 (4th)		31687	31721	31682	31683	31691	14377(16) 31753(25)
U-134 U-134A (Less Remote Control)	31669 (A) 31670 (B) 31671 (C) 31673 (49, 31, 25, 19 meter)	31672 (A) 14952 (B) 14953 (C) 14954 (49, 31, 25, 19 meter)	31689 (A) 31690 (B, 49) 31255 (C, 31) 31688 (19) 31254 (25)	31746	31749 31747 (3rd) 31748 (4th)		31685	31721	31682	31683	31674	11203(10) 14377(16) 31751(16)
135B	4430		4432	4431	7840 4538 (3rd)		4533	9539	4535	4536		
ACR-136	4808 (B) 7803 (A, C)	4815 (B) 7805 (A, C)	7807 (A, C) 4807 (B)	4431	4433		4505	9492	4809	4810	9511	4428(8) 7790(10)
140 141 141-E	6631 (150-410 K.C.) 6634 (540-1500 K.C.) 6637 (1500-4000 K.C.) 6640 (4000-10000 K.C.)	6632 (150-410 K.C.) 6635 (540-1500 K.C.) 6638 (1500-4000 K.C.) 6641 (4000-10000 K.C.) 6643 (8000-18000 K.C.)	6633 (150-410 K.C.) 6636 (540-1500 K.C.) 6639 (1500-4000 K.C.) 6642 (4000 10000 K.C.) 6644 (8000-18000 K.C.)	6890	6891	6608	6605	8969	6612	6892	9042	6609(18) 6889(18)
143 (1934) (Spkr. No. 72203-1)	7810 (P.B., L.W.) 7803 (B, S.W.)	7808 (P.B., L.W.) 7805 (B, S.W.)	7807 (B, S.W.) 7809 (P.B., L.W.)	4431	4433	4620	9535	9533	4519	4616	9505	7790
143 (1935) (Spkr. No. 72203-4)	7810 (B, X) 7803 (A, C)	7808 (X, B) 7805 (A, C)	7807 (A, C) 7809 (X, B)	4431	4433	4620	9535	9533	4809	4813	9505	7790
ACR-155	12708	13654	12084 (beat) 12709	12652	12653		13903	13902	12087	13880	11211	5212(16) 12467(30)
ACR-175	12092 (A, C) 12098 (B)	12093 (A, C) 12099 (B)	12084 (B.F.) 12094 (A, C) 12100 (B) 5221 (D)	12095	12096 12097 (3rd)		11253	11235	12087		12331	11248(4) 11203(10) 5212(18)
211 (RCA-41 Output)	4430		4432	4431	4433		4505	9492	4429	4426	9511	4428(8) 7790(10)
211 (RCA-42 Output)	5087		5089	4431	4433		4892	8935	4429	5052	9511	4428(8) 7790(10)
214	4903		4902	4900	4901		4893	9588	4790	5052	4897	4428(8) 7790(10)
221	6701	6699	6700	6697	6698		6770	8935	6695	6705	9446	6571
223	6527	6528	6471	6483	6484		6861	8935	6485	6860	7734	6862
224	4516 (P.B.) 7803 (B, S.W.)	4514 (P.B.) 7805 (B, S.W.)	7807 (B, S.W.) 4511 (P.B.)	4431	4433		4472	8935	4519	4517	9511	4428(8) 7790(10)
224E	4734 (A) 7803 (B, C)	4751 (A) 7805 (B, C)	7807 (B, C) 4733 (A)	4431	4433		4472	8935	4519	4517	9511	4428(8) 7790(10)
225	5087		5089	5102	5103 5105 (3rd)		4892	8935	4429	5052	9511	7790(10) 5101 (Pack)
226	4808 (B) 4803 (A, C)	4815 (B) 7805 (A, C)	7807 (A, C) 4807 (B)	4431	4433	(Spkr. with spade term.) (Spkr. with conn. term.)	4472 4892	8935 8935	4809	4810	9511	4428(8) 7790(10)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
235B	4430		4432	4431	7840 4538 (3rd)		4533	9432	4535	4536		
236B	4796		4800	4431	7840 4538 (3rd)	4533		9432	4535	4799		
240	6631 (150-410 K.C.) 6634 (540-1500 K.C.) 6637 (1500-4000 K.C.) 6640 (4000-10000 K.C.)	6632 (R.F.) (150-410 K.C.) 6635 (R.F.) (540-1500 K.C.) 6638 (R.F.) (1500-4000 K.C.) 6641 (R.F.) (4000-10000 K.C.) 6643 (R.F.) (8000-18000 K.C.)	6633 (150-410 K.C.) 6636 (540-1500 K.C.) 6639 (1500-4000 K.C.) 6642 (4000-10000 K.C.) 6644 (8000-18000 K.C.)	6890	6891	6608	6605	8969	6612	6892	9042	6609(18) 6889(18)
242 (1934) (Spkr. No. RL60A-4)	7810 (P.B., L.W.) 7803 (B, S.W.)	7808 (P.B., L.W.) 7805 (B, S.W.)	7807 (B, S.W.) 7809 (P.B., L.W.)	4431	4433	4620	4637	8969	4519		9505	7790
242 (1935) (Spkr. No. RL60B-2)	7810 (B, X) 7803 (A, C)	7808 (X, B) 7805 (A, C)	7807 (A, C) 7809 (X, B)	4431	4433	4620	5041	8969	4809	4813	9505	7790
243	7810 (B, X) 7803 (A, C)	7808 (X, B) 7805 (A, C)	7807 (A, C) 7809 (X, B)	4431	4433	4620	5041	8969	4809	4813	9505	7790
261	6538	6539	6437	6435	6440 6441 (3rd)	6432	6455	8969	6447	6448 (L.F.) 6449 (H.F.)	8978	6430 (Pack) 6443(10)
262 (1934) (Spkr. No. RL-60A-1)	4410 (D) 7803 (B, S.W.) 7810 (P.B., L.W.)	7805 (B, S.W.) 7808 (P.B., L.W.) 4421 (D)	7807 (B, S.W.) 7809 (P.B., L.W.)	4431	4433	7841 7832 (Driver)	7834	8969	4650	7795 (L.F.) 4648 (H.F.)	9505	7790(10) 7788(18)
262 (1935) (Spkr. No. RL-60A-6)	4410 (D) 7803 (B, C) 7810 (X, B)	7805 (A, C) 7808 (X, B) 4421 (B)	7807 (A, C) 7809 (X, B)	4431	4433	7841 7832 (Driver)	5080	8969	4832	4829 (L.F.) 4830 (H.F.)	9505	7790(10) 7788(18)
263	4410 (D) 7803 (B, C) 7810 (X, B)	7805 (A, C) 7808 (X, B) 4421 (B)	7807 (A, C) 7809 (X, B)	4431	4433	7841 7832 (Driver)	5080	8969	4832	4829 (L.F.) 4830 (H.F.)	9505	7790(10) 7788(18)
281	4410 (D) 7803 (B, S.W.) 7810 (P.B., L.W.)	7805 (B, S.W.) 7808 (P.B., L.W.) 4421 (D)	7807 (B, S.W.) 7809 (P.B., L.W.)	7791	7792 7793 (3rd) 7794 (AVC)	7785 7786 (Interstage)	4506	7000	7798	7795 (L.F.) 7797 (H.F.)	9505	7790(10) 7788(18)
301	6666		6664	6662	6663		6788	8987	6667	6669	9464	6661
320	6701	6699	6700	6697	6698		6476	9428	6695 6757 (Phono)	6705	9446	6571(10) 6703 (Pack)
321	6701	6699	6700	6697	6698		6770	8969	6695 6766 (Phono)	6705	9446	6571(10) 6703 (Pack)
322	4516 (P.B.) 7803 (B, S.W.)	4514 (P.B.) 7805 (B, S.W.)	4511 (P.B.)	4431	4433		4472	8935	4519 6766 (Phono)	4517	9511	4428(8) 7790(10)
322E	4734 (A) 7803 (B, S.W.)	4751 (A) 7805 (B, S.W.)	7807 (B, S.W.) 4733 (A)	4431	4433		4472	8935	4519 6766 (Phono)	4517	9511	4428(8) 7790(10)
327	6983	6699 (R.F.)	6700	6697	6698	6987	4599	8969	6695 4590 (Phono)	6705		3796(4) 6986(8)
340 340E	6628 (8000-18000 K.C.) 6631 (150-410 K.C.) 6634 (540-1500 K.C.) 6637 (1500-4000 K.C.) 6640 (4000-10000 K.C.) 6643 (8000-18000 K.C.) or (R.F.)	6632 (150-410 K.C.) 6635 (540-1500 K.C.) 6638 (1500-4000 K.C.) 6641 (4000-10000 K.C.)	6636 (540-1500 K.C.) 6639 (1500-4000 K.C.) 6642 (4000-10000 K.C.) 6644 (8000-18000 K.C.)	6890	6891	6608	6605	8969	6612 6766 (Phono)	6892	9042	6609(18) 6626 (Pack) 6889(18)
341	7810 (P.B., L.W.) 7803 (B, S.W.)	7808 (P.B., L.W.) 7805 (B, S.W.)	7807 (B, S.W.) 7809 (P.B., L.W.)	4431	4433	4620	4637	8969	4519 6766 (Phono)	4616	9505	7790(10)
342	7810 (B, X) 7803 (A, C)	7808 (X, B) 7805 (A, C)	7807 (A, C) 7809 (X, B)	4431	4433	4620	5041	8969	4809	4813	9505	7790(10)

INSIST ON GENUINE RCA VICTOR REPLACEMENT PARTS

REPLACEMENT PARTS GUIDE (Continued)

RCA Victor Model	Antenna Coil	R.F. or Detector Coil	Oscillator Coil	1st I.F. Trans.	2nd I.F. Trans.	A.F. Trans.	Output Trans. *Comb. With A.F. Trans.	Cone	Volume Control	Tone Control	Power Trans.	Filter Pack Or High Voltage Capacitor
380	6561	6539	6437	6564	6566 6565 (AVC)	6562 6568 (Inter-stage)	6569	8969	6447 6799 (Phono)	6448 (L.F.) 6449 (H.F.)	9468	6561(10)
380HR	6561	6539	6437	6564	6565 (AVC) 6566	6562 6568 (Inter-stage)	6887	9481	6447 6799 (Phono)	6448 (L.F.) 6449 (H.F.)	9468	6571(10)
381	4410 (B) 7803 (B, S.W.) 7810 (P.B., L.W.)	7805 (B, S.W.) 7808 (P.B., L.W.) 4421 (D)	7807 (B, S.W.) 7809 (P.B., L.W.)	7791	7794 (AVC) 7792 7793 (3rd)	7785 7786 (Inter-stage)	7826	7000	7798	7795 (L.F.) 7797 (H.F.)	9505	7790(10) 7788(18)
810K 810K-1	14372	14414	14516	14376	14283		14534	12667	14335	14371	11211	5212(16) 14531(25)
810T	14372	14414	14516	14376	14283		14534	12642	14335	14371	11211	5212(16) 14531(25)
810T-4	30288 (A, B, C, X)	30229 (A, B, C, X)	14516 (A, B, C) 12881 (X)	14376	14308		14534	12642	14335	30084	11213	5212(16) 14531(25)
811K	14372	14414	14713	14828	14765 14709 (3rd)		14534	12667	13144	14705 (L.F.) 14764 (H.F.)	14689	5212(16) 14531(25)
811T	14372	14414	14713	14828	14765 14709 (3rd)		14534	12642	13144	14705 (L.F.) 14764 (H.F.)	14689	5212(16) 14531(25)
812K	14372	14414	14713	14706	14707 14708 (3rd) 14709 (4th)		14601	14602	12861	14705 (L.F.) 14703 (H.F.)	14689	5212(16) 14531(25)
812X	30228	30229 (R.F.)	14516 (A, B, C) 12881 (X)	14376	14308		30612	12642	30596	30574		30597(16) (Pack) 30598(32)
813K	14865 (A) 14866 (Special Spread)	14867 (A) 14868 (Special Spread)	14869 (A) 14873 (19 meter) 14872 (25 meter) 14871 (31 meter) 14870 (49 meter)	14706	14707 14708 (3rd) 14709 (4th)	14855	14921	14602	12861	14863 (Music Speech) 14703 (Fi-delity)	14879	14377(16) 13611(20) 14521(25)
816K	14948 (A) 14949 (B) 14950 (C) 14951 (Special Spread)	14867 (A) 14952 (B) 14953 (C) 14954 (Special Spread)	14869 (A) 14955 (B) 14956 (C) 14873 (19 meter) 14872 (25 meter) 14871 (31 meter) 14957 (49 meter)	14706	14958 14708 (3rd) 14709 (4th) 14959 (5th)	14855	14992	14602	12861	14863 (L.F.) 14703 (H.F.)	14944	5212(16) 14377(16) 13611(20) 14531(25)
910KG	31293 (A) 31294 (B) 31297 (C)		31296 (A) 31295 (B, C)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534	31275	31450	31248	31225	5212(16) 14531(25)
911K	31263 (A) 31264 (19, 25, 31, 49 meter)	31265 (A) 31266 (19, 25, 31, 49 meter)	31257 (A) 31258 (19 meter) 31254 (25 meter) 31255 (31 meter) 31256 (49 meter)	(Metal Tops) 31267 (Bklte. Tops) 32068	(Metal Tops) 31268 (Bklte. Tops) 14283		14534	31275	31249	31248	31225	5212(16) 14531(25)

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